Perceptions of interaction in an integrated CALL context: Analysing the learning experience from an Activity Theory perspective

by

Tanyasha Michelle Yearwood

born in the
Republic of Trinidad and Tobago

A dissertation
submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy (PhD [Dr. phil.])

Faculty of Humanities
Department of English
University of Duisburg-Essen
Germany

Date of oral defense: 9th September 2014
Head of exam commission: Prof. Dr. Ulrike Haß
PhD supervisor/1st marker: Prof. Dr. Bernd Rüschoff
2nd marker: Prof. Dr. Andreas Müller-Hartmann

To Rodrigo

…for your immense support and strength

Acknowledgements

My deepest thanks are extended to Prof. Dr. Bernd Rüschoff and Prof. Dr. Andreas Müller-Hartmann for your mentorship and commitment to seeing this research project to its completion.

Among others to whom I owe a debt of gratitude are, firstly, the teachers, students and school administrators who opened their classrooms to me and gave of their time. I truly value your engagement, without which the projects could not have been realised.

I am also indebted to the support of my colleagues at the University of Duisburg-Essen. For your feedback and encouragement, I say “Thank you!” – especially to Claudia and Martin; your friendship has meant a great deal to me.

To my colleagues and friends in Heidelberg, I am equally grateful for your steadfast belief in my ability to bring this project to its end. I value the contribution you have made to enabling me to get past the final few hurdles. Nicola, Raphaela, Nelly and Rodrigo – thanks for your long hours of work during the final stage of preparing my document. Christian, thanks to you as well for the nice job with my digital data.

I would also like to mention and express my gratitude to my international network of colleagues and friends, especially for the encouragement of my dear friends Keisha, Heike and Ainslie. Prof. Stephen Bax, thank you too, for your quick responses to my requests.

To my mother and friend, Jacqueline Yearwood, the thanks you deserve goes far beyond these few words. Thank you for always believing in me. Not any less deserving of my gratitude are my sister and brother, Juliette and André – thank you for inspiring the confidence I needed along the way.

To my husband, Rodrigo, and our three lovely children, Alejandro, Sofia and Gabriela, who understood the importance of this work for me and supported me in very special ways – thank you from the bottom of my heart.

Finally, I thank the good Lord for wisdom, courage and the right measure of strength which I received every step of the way.

THANK YOU!

Table of contents

List of figures

List of tables

List of photos

List of abbreviations

in alphabetical order

AC	Activity Centre
AS	Activity System
AT	Activity Theory
CALL	Computer-Assisted Language Learning
CMC	Computer Mediated Communication
EFL	English as a Foreign Language
ICT	Information and Communication Technology
IT	Information Technology
IWB	Interactive Whiteboard
L1	Native Language
L2	Foreign/Second Language
LTE	Limited Technology Environment
NBLT	Network-Based Learning and Teaching
OECD	Organisation for Economic Co-operation and Development
SLA	Second Language Acquistion
VLE	Virtual Learning Environment
WP	Word Processor/Processing

1 Introduction

An introduction to the concept of the classroom divide as a starting point for considering the value of a flipped version of the Limited Technology Environment and an overview of the research agenda in exploring its potential for supporting effective learning conditions in Computer-Assisted Language Learning

Within recent times, classroom-based Computer-Assisted Language Learning (CALL)[1] has been viewed as not yet having been ubiquitously impacted on by new technological advances and has, consequently, been described as having "remained in a 'walled-garden' or analogue mode" (Ensor et al., 2013: 1). This critique on the limitations of the CALL classroom, while specifically referring to the lack of interconnectivity between classrooms around the world, supports previous views of the CALL classroom being a "one-way transmission and prescriptivist organization of knowledge" (Guth & Helm, 2010: 13) or what Beatty refers to as being "stuck in the behaviourist rut…" (Beatty, 2003: 36). In other words, the implication running through this line of argumentation is that CALL classrooms seem to be lagging behind in terms of providing evidence that computer technology has been integrated into the classroom setting in a particularly meaningful manner where the true potential of the technology for supporting effective learning is achieved. This further suggests that the search continues for a framework for implementing computer technology within the classroom setting so that it "serves as a tool for facilitating students to articulate their thoughts, to explore and construct knowledge, and to become more autonomous in learning" (Li & Choi, 2014: 1)

This, therefore, calls into question such elaborate claims as those made by Beatty (2013) that "CALL is now seen to be completely complementary to almost all classroom language teaching and learning activities" (Beaty, 2013: 17) – at least in the sense that this does not seem to be reflected in actual classroom practice.

Interestingly enough, the above-mentioned perspectives of the CALL classroom bring to mind the very issues which were being addressed at the turn of the millennium and already as far back as the 1990s, the point at which computer technology had become a household name in foreign language teaching discourse worldwide and had started to propel research beyond the boundaries of the

[1] Throughout this work CALL is used, as defined by Egbert (2005), to denote the use of the computer in any language learning setting to support learners in the language learning process.

classroom, into new Virtual Learning Environments (VLEs) (Chapelle, 1997, 2001; Lamy & Goodfellow, 1999; Ortega, 1997; Osuna & Meskill, 1998; Warschauer, 1995). With such a thrust towards expanding the classroom into virtual space, the types of in-class CALL environments defined and investigated in the 1990s (Egbert & Hanson-Smith,1999) seemed to be taking a historical backseat.

At around the same time that this afore-mentioned "virtual surge" began, however, the issue of the effective use of computers in classrooms was also being called into question by sceptics like Cuban (2001) in the U.S. context, for example, who criticised the "bandwagon" spread of computers and what he regarded as its inevitable failure to deliver the implicit revolution promised. While Cuban's (2001) claim that computers were, therefore, "oversold and underused" (Cuban, 2001) bore some political slant as he often highlighted the lack of foresight on the part of the policy-makers under the leadership of the government at the time, his discussion did point to one of the key issues with which CALL practitioners and researchers had to begin and, as indicated above, are still concerning themselves: To what extent does the virtually expanded CALL scenario or even an abundance of computers within a CALL environment presuppose effective use?

This question is reminiscent of the central issue raised by Egbert and Yang in their 2004 publication entitled, "Mediating the digital divide in CALL classrooms: Promoting effective language tasks in limited technology contexts." In this article, the authors address the situation of the "digital divide" in the CALL classroom that focuses "not on those who have or do not have technology, but on how those who have it use it in the pursuit of effective language teaching and learning" (Egbert & Yang, 2004: 281). They propose that researchers react to this dilemma of the effective use of computers particularly in the Limited Technology Environment (LTE), so that "the digital divide in CALL classrooms between good use and poor use can be bridged to the benefit of all" (Egbert & Yang, 2004: 290).

This digital divide in CALL classrooms deviates from the traditional definition with which most readers might already be familiar. Traditionally, the digital divide is a term which has been used to denote "the gap between those who do and do not have access to computers and the internet" (Warschauer, 2003: 1). In rethinking this understanding of the digital divide, this latter author highlights the importance of considering the extent to which technology is actually serving a meaningful purpose, not just in the society at large, but more specifically within the classroom

since it is not simply the installation of hardware and software, in the case of the use of the computer, which adds value to the lives of users, but the processes which are facilitated by its use: “The bottom line is that there is no binary divide and no single overriding factor for determining such a divide. ICT does not exist as an external variable to be injected from the outside to bring about certain results. Rather, it is woven in a complex manner into social systems and processes” (Warschauer, 2003: 8).

Like Warschauer, I too appreciate the value of the former concept of the digital divide as a catalyst in pointing to deeper divide issues. While Warschauer proceeds to focus more on the social systems as impacted on by educational policy, for example, I have chosen to focus on the social system at the classroom level and consider how a better understanding and grasp of the processes at play within the classroom can lead to bridging what was referred to above as the CALL classroom divide.

It is, therefore, against this backdrop – a situation in which CALL, with all its cutting edge amenities, had taken off into the virtual realm, but elaborate and abundant CALL classroom set-ups were not necessarily being equated with effective use, and where, on the other hand, the effective use of limited technology (as a means of bridging the divide) was also being supported – that this present research undertaking was conceptualised.

While Egbert and Yang (2004) – in the article cited above – seem to be focusing on the LTE in terms of the unavailability of many computers, the focus of this present research effort is on the potential value to be had in actually deliberately *limiting* the use of technology for the explicit purpose of fostering greater effectiveness[2].

This notion of limiting the use of technology, as will be discussed later on, refers to a conscious choice on the part of the teacher to integrate just one or a few computers within the classroom setting in such a way that it promotes and supports meaningful interaction as defined from a sociocultural perspective where contextual factors affecting the social system of the classroom are brought more clearly into focus.

[2] In the context of this research, “effectiveness” or “effective use” of the computer can be understood to mean the opportunities created by the integration of the computer into the learning context which improve conditions for learning as defined by Hubbard (2009) and which will be discussed in detail later on in the work.

In addition to creating the space for interaction which this scenario can support, using one single computer, for example, could also increase the potential of establishing it among other mediational means in daily use. This goal of literally situating the computer in the classroom where it can potentially become "invisible" in Bax's (2003, 2011a, 2011b) terms, has implications for the ways in which learners will be engaged and how they interact with the computer, not as in an isolated, one-off event, but as part of a "natural" constellation with the computer being simply one of the various artefacts available for use. In other words, this classroom setting in which the computer becomes an additional, and ultimately integrated medium to support learners in their learning experience, can be defined and understood as an Activity System (AS) – a "social-material setting" (Lantolf & Thorne, 2006) structured and influenced by a set of contextual factors.

In investigating the way in which technology, in general, and the computer, in particular, can be seen to function within the classroom, that is, as part of an integrated system, this research, therefore, adds to an understanding of the specific way in which the CALL classroom divide referred to above by Egbert and Yang (2004) can be bridged. In other words, it adds to the empirical base upon which claims can be made for even limited technology to contribute to improving conditions for learning.

The issue being considered in this context, therefore, is the precise manner in which the computer can be said to be contributing to the classroom AS. In other words, identifying the central moments within the complex classroom system which provide evidence that learning is being supported in a meaningful manner through interaction, would constitute the research focus.

In a pilot study and three further case studies conducted to bring this thesis to fruition, the focus could, therefore, be said to be twofold. Firstly, the focus was on learners' perceptions of their experience in terms of the interaction taking place as they work on a collaborative activity within a one-computer classroom environment. A second focus was on how this interpretation of the experience is corroborated by theoretical understandings of how the computer contributes within the social constellation of the CALL classroom to improving learning conditions.

The data collected between 2002 and 2008 in four foreign language classrooms at the secondary school level and, in the case of the final study, at a post-secondary

vocational college at that time, reflect the trajectory which the general research aim has taken at various levels.

In the first instance, it follows my research career in Germany and Trinidad and Tobago as I sought and found teachers who were willing to work along with me based on their openness toward discovering meaningful ways in which the computer can be integrated at the classroom level.

On a second plane, it represents the progression of my research aim to come to a clear understanding of the integrated CALL classroom context and of the levels of interaction which can be facilitated through the use of one computer, for example – a context I specifically refer to later on as the "one-CALL" classroom.

This particular research aim, the framework of which will be elaborated on in the theoretical chapters, stems from my particular appreciation for the social dimension of learning based on sociocultural theory particularly as it relates to the co-construction of knowledge and learning products.

Thirdly, and quite closely related to the previous point, it depicts the cohesion which a theoretical framework such as Activity Theory (AT) can provide within the grounded theory research paradigm in bringing together a variety of perceptions of participants on their experience in distinct contexts, to explain the way in which contextual factors define and impact on the nature of the interaction in which they are engaged.

So far, the two guiding concepts around which the research is framed, i.e., the LTE and the AS have been briefly introduced. At this juncture, it therefore makes sense to clarify their meaning in order to provide an initial basis upon which to interpret the research.

As this notion of *limited* and *limiting* might raise semantic issues seeing that these terms, in their common usage, tend to be ascribed negative connotations, I will define them as they are meant to be understood within this work. Then, I will give a brief overview of what constitutes an AS and comment on current trends in research on interaction.

Following this, I will outline the general research goal and the research questions, introduce the methodological approach and situate the investigation in terms of its value to the CALL research community and beyond.

Finally, I will give a synopsis of the ensuing chapters.

The "Limited Technology Environment":

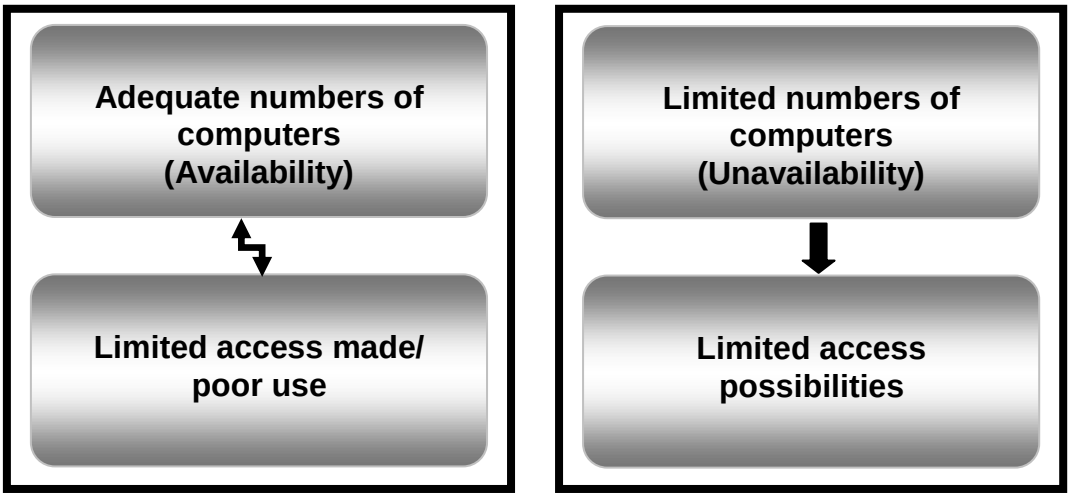
In this work, I use the term *"Limited Technology Environment"* in contrast to what might be termed its counter-concept, *"Technology-Rich Environment",* to refer to two particular contexts as they relate specifically to language learning. Firstly, I refer to a formal school setting in which large numbers of computers or computer laboratory facilities, though available on-site, are either only accessed by language teachers on an occasional or project basis and not to the extent that they can be said to be a regular part of the learning constellation (Bax, 2011a) or, they may be accessed for the mere sake of using the technology and not necessarily to achieve a sustainably valuable pedagogical goal (Egbert & Yang, 2004).

Secondly, I also use the term to refer to a school setting in which there is at least one computer or even a few (e.g. laptops with a digital projector) available for classroom use.

In short, these two contexts define the LTE in terms of:

a) adequate **availability**, but with a seemingly contradictory response to this availability in terms of **"limited" access** being made by teachers and/or **poor use** of this available technology; and
b) **"limited" numbers (unavailability)** or **"limited"** access possibilities due to logistic constraints like greater demand for use by Information Technology (IT) teachers (see Figure 1.1).

Figure 1.1 Limited Technology Environment



"Limited Technology Environment" defined in terms of availability, but with limited access and/or poor use or unavailability, resulting in limited access.

Although the outlook from the perspective of these definitions might at first seem bleak, as previously hinted at, the results of the research suggest that there is possible value in consciously "*limiting"* the use of the computer to provide opportunities for effective interaction which, consequently, can be considered to represent "good" use of the technology and have implications for the way in which we design the CALL environment to promote quality learning experiences in contemporary classrooms in their daily constellation. As Egbert and Yang (2004) so aptly put it, "viewed through a lens of creating optimal language learning environments, the use of limited technology can be as effective for teaching language as the use of 'unlimited' technology" (Egbert & Yang, 2004: 281).

I, therefore, propose a further representation of the LTE – one variation of which can be the one-computer classroom – in which less can be seen as more:

c) **"limited" numbers (one-computer classroom context)**, for effective use.

In proposing this particular variation to the concept of the LTE, I am not suggesting that we fall into another technology fallacy in which we now adopt fewer computers and can be guaranteed that there will be more effective use. Quite to the contrary, the implication here is that a limited number of computers should not be synonymous with limitations in terms of the quality of the learning experience. Rather, in view of the fact that access and logistic issues still seem to hinder an integrated approach to language learning in the daily classroom reality, the choice to limit the number of computers might in fact constitute the type of integrated environment in which meaningful interaction can take place.

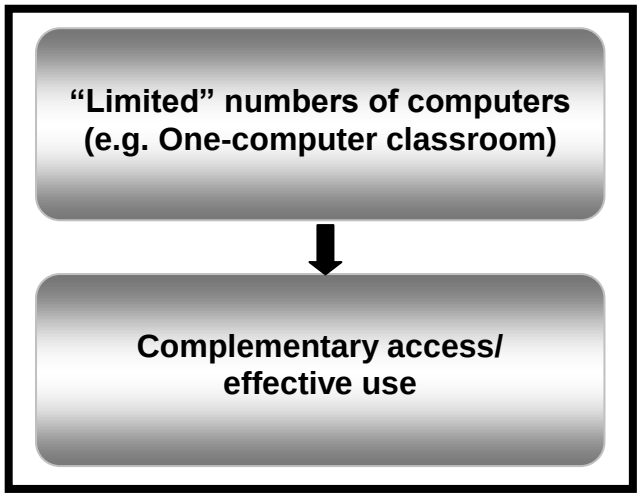
In this research, the one-computer or "one-CALL" classroom is the specific constellation selected to investigate this potential and the nature of this type of interaction, that is, a classroom in which a single laptop is made available to learners for assigned or optional use during lessons.

It should be noted that the one-CALL classroom, as defined here, offers one model for *limiting* technology for effective use, vis-à-vis facilitating meaningful interaction. One or two fixed (networked or non-networked) computers would represent yet another model for limiting technology for effective use, if, as stated above, the objective is to establish it as a mediational means so that language learners can meaningfully interact in the classroom.

To further exemplify the distinction between this setting and the LTEs presented previously in Figure 1.1, I will henceforth refer to the deliberate limiting of technology for effective use as a "flipped version" of the LTE. This simply means that the definition turns the concept of limited, in terms of "unavailability", on its head and ascribes it a positive connotation since its function is to engender a positive classroom experience.

In any of the flipped version classroom models mentioned here, the goal would be to promote effective use by having the computer play a complementary role in the classroom AS (see Figure 1.2).

Figure 1.2 A flipped version of the Limited Technology Environment



"Limited Technology Environment" defined in terms of consciously fitting the learning environment with a limited number of computers to provide access to technology as an integrated meditational means to promote effective use.

The "Activity System":

In order to study and understand the one-CALL classroom as defined above and identify the elements of the interaction process which can be deemed effective or which can improve learning conditions, the location or network within which the interaction took place, that is, the classroom itself, was the point of focus in the research. It is this rather complex construct – or the ways in which and the levels on which this interaction took place in the classroom – which constitutes the AS. This is in keeping with the perspective of AT as elaborated by Engeström 1987, cited in Engeström 2001, in which the AS is looked at as a tangible representation of core elements which work together to construct and reconstruct the process in

which participants engage while working toward a specific goal. As Lim and Hang (2003) put it, “[a]n activity system as a unit of analysis allows one to observe the actual processes by which activities shape and are shaped by their context” (Lim & Hang, 2003: 51).

According to Lantolf and Thorne (2006), Engeström’s model of AT, therefore, “has proved a productive framework for mapping and transforming the complexities of social practice in a wide array of life settings” (Lantolf & Thorne, 2006: 222).

It is for this reason, as Hardman (2007) also suggests, that AT, the framework from which the concept of an AS emerges, “provides a powerful analytical framework for situating learning in context” if the objective of the research is, for example, to elucidate the role of computers in facilitating learning (Hardman, 2007: 111).

In her research examining the AS of a mathematics classroom at the primary level, Hardman (2007) expands on the notion of temporarily freezing pedagogial moments to more closely observe engagement.

This particular methodological approach has also been applied in recent CALL studies investigating “instances” of interaction (Gumock et al., 2005) and “specific moments” of language emergence (Dooly, 2011). This suggests that current research in CALL continues to be concerned with, among other issues, arriving at an indepth understanding of processes occurring at the classroom level.

In this same vein, the AS of the specific CALL settings defined in the studies reported on in the present work, is placed within the framework of AT in order to identify and ascertain the pedagogical value of the interaction facilitated. These studies focus on what I denominate the “Activity Centre” (AC) at the classroom level. In addition to looking at the AC, the AS as a whole, that is, the entire social context – including contextual factors such as the community structure which defines and impacts on the interaction – is also considered.

General research goal:

At the heart of the studies carried out in the research process, all of which are set in a select one-CALL context, I investigate, more specifically, a question which continues to occupy researchers with a vested interest in collaborative language learning in CALL contexts, that is: *In which specific and observable ways can the*

flipped version of a LTE be considered to be contributing to improving conditions for learning in terms of supporting interaction?

The key aim of my research, therefore, is to examine what I call the dynamism of the various relationships in this constellation: how learners (as active agents in the collaborative process) interact with each other and, at the same time, with the artefacts available to them within the setting to accomplish the task at hand. By analysing learners' perceptions of the interaction taking place as they work together at, with or around one computer and corroborating this with observations of the structure and organisation of this interaction, I sought to identify the role, function and inter-relatedness of the "social agents" or "interlocutors" acting in this context, to then be able to draw conclusions on the extent to which the use of the computer as a complementary mediational means within the actual classroom setting can be said to be effective.

The research questions:

This overarching orientation led me to define the following initial research questions:

1. How do language learners interact with each other and with the computer as a mediational means within a one-CALL classroom context
    a. What are the observable features of interaction taking place in the AS of a one-CALL classroom?
    b. To what extent can the mediational means which they make use of be said to bring about improvement in the learning conditions of this CALL context?
2. How do language learners interpret their learning experience in such a context?
    a. Which roles do learners assume as they interact in a one-CALL classroom?
3. What implications does an analysis of interaction taking place in a one-CALL classroom, as seen from an AT perspective, have for improving language classroom practice in general?

Methodological approach:

In terms of selecting an appropriate methodology to address these questions, this meant approaching the research from a qualitative research paradigm. In such a paradigm, I would have the advantage of being able to explore and understand these relationships from an emic (or insider) perspective, as well as from a complementary etic (or outsider) perspective. Additionally, I would be able to address this phenomenon using instrumental case studies (Stake, 1995) whose function it is, essentially, to offer a deep understanding of a particular issue evident in a specifically defined context. In this work, the collection of case studies examined provided a progressive understanding of the phenomenon under study.

This methodological approach, therefore, offers an enlarged view and, consequently, a more detailed understanding of interaction in the one-CALL classroom.

The value of such a microscopic view of the CALL classroom is inevitably multiple: Firstly, it can be seen as a recognition of the need to keep the reality of a vast number of classroom practitioners, in terms of the feasiblitiy of using computers within the language learning classroom itself, in focus. Secondly, and as argued by Lafford (2009), there continues to be a growing need to examine processes as opposed to product in the context of CALL "…other than the attainment of linguistic outcomes..." (Lafford, 2009: 692). It is along these lines that this work attempts to shed further light on the way in which, both from an emic standpoint as well as from an etic observation of the nature of the interaction, the use of the computer, as a desired complementary, "invisible" mediational means, can be said to improve conditions for learning.

In summary, it can be said that this thesis constitutes a particularly valuable contribution and extension to the work of researchers and practitioners interested in the effective use of the computer in collaborative CALL and also has specific relevance for a number of other interest groups spanning the "theory to practice" spectrum. These include, among others:

Second Language Acquisition (SLA) researchers focusing on CALL from a sociocultural perspective, CALL curriculum developers as well as language teachers in schools where the integration of meaningful CALL and (Information and Communication Technology) ICT in general is taking place.

For SLA researchers focusing on social interaction in CALL, this research provides an overview of those theoretical perspectives often also espoused in the sociocultural paradigm which offer a framework for further discussion on the role played by collaboration among students working jointly on a task in a CALL context.

As an extension of this orientation of SLA research and CALL research in general, the research also fulfils the fundamental aim of CALL professionals which, as Chapelle (2007) indicates, is "to create ideal language learning conditions through strategic use of pedagogies around…learner-computer interactions,…for example. They seek evidence for the effects of…innovations on learning interactions, attitudes, and outcomes; and they design research to be informative to the community of specialists in CALL" (Chapelle, 2007, cited in Grgurović et al., 2013: 166).

For CALL curriculum developers, the value of this work lies in the fact that it offers a framework guiding classroom practice for the integration of ICT which according to Donnelly et al., (2011) still needs to be further established.

For language teachers, it offers perspectives on what constitutes effective use of technology, which as previously stated, does not necessarily imply extensive or even elaborate CALL classroom arrangements.

In order to make this proposed contribution to research and to those directly and indirectly involved with the learning taking place in CALL classrooms, the thesis has been organised into 10 chapters which expound on this issue from a theoretical and practice-based perspective.

In the following chapter, Chapter Two, a review of what can be considered 21st century perspectives on CALL will be examined. It proposes a broader view of CALL and then reviews the parallel development of educational theories and CALL applications as interpreted by Kern and Warschauer (2000). Bax's (2003, 2011a, 2011b) critique on such a delineation of CALL development and his notion of integrated CALL is then discussed. In this vein, the issue of "normalisation" is introduced and established as a possible principle to guide the goals of the one-CALL classroom – as representative of an integrated CALL context. The chapter ends by considering the value interaction has been given within this discussion and which direction research has been tending toward.

Chapter Three continues by situating this theme of interaction in the recent cognitive-social debate in SLA, which seeks to promote greater focus on processes occurring in the language learning classroom. The chapter reviews alternative approaches to SLA and focuses in on the key issues raised in substantiating sociocultural theory as a valuable orientation for examining and, consequently, understanding the architecture of interaction in the CALL classroom. In Chapter Four, AT is introduced as one perspective from which interaction in CALL can be analysed when seeking to understand the ways in which this context can provide positive learning experiences. The various components of the AS model are explored along with the hierarchical levels on which activity can be said to occur. The chapter then closes by reiterating the value of applying AT to examine classroom interaction.

The following chapter, Chapter Five, first presents the initial motivation for and development of the research idea and then offers a detailed overview of the research project by outlining the progressive or "incremental" nature of the Pilot Study and the three ensuing case studies. Subsequently, the research questions, as outlined above, are further detailed in terms of the objectives established to respond to each of them. Finally, the various forms of data collection methods used throughout and the process of data analysis are clarified.

The remainder of the thesis adopts a grounded-theory approach towards developing a framework of analysis for interaction in the one-CALL scenario. In other words, beginning with the Pilot Study, the studies represent a chronological approach to analysing the major issues contributing to determining the effectiveness of a one-CALL environment as far as interaction is concerned. Each of the ensuing chapters, therefore, reports on and discusses the findings of one case study.

Chapter Six presents the findings of the Pilot Study and analyses the perceptions of pupils on interaction in the one-CALL classroom AS. The aspects of interaction identified in the Pilot Study are further examined in Chapter Seven, and peer interaction around the computer comes more sharply into focus. Chapter Eight, therefore, takes a more microscopic look at the structure and organisation of the AS. In this setting, the analysis also zeroes in more closely on the learners' roles within the integrated CALL classroom as they interact with each other and with the computer.

Following on from this examination of the structure and organisation of the interaction, Chapter Nine takes the form of a replica study in which student roles are, yet again, closely examined in the context of triadic interaction in which the computer assumes a social function.

Within each of these three latter chapters, the discussion is interwoven within the presentation of the findings, so that the final chapter, Chapter Ten, serves the function of providing a synopsis of the various discussions, drawing on the key issues identified as relevant to the research within the conceptual and theoretical chapters. In this final chapter all the research questions are revisited to establish the extent to which they have been answered to be able to provide deeper understandings of the nature of interaction in the integrated CALL classroom from multiple perspectives and as seen through the lens of AT.

The thesis ends with a brief summary of the research project in terms of having achieved its objective and recommendations for further research are made.

2 Updating CALL in the 21st Century

A discussion on emergent perspectives on CALL and the call for normalisation as a means of further expanding research and classroom goals

2.1 Introduction

As previously stated, the main aim of the research is to take a closer look at "social agents" in the one-CALL context from an AT perspective, with a focus on the interaction taking place, to be able to account for the way in which conditions for learning can be said to be supported.

For some, this one-CALL context might at first create images of a traditionally defined CALL setting, described by Kern and Warschauer (2000) as being "... associated with self-contained, programmed applications such as tutorials, tools, simulations, instructional games, tests and so on" (Kern & Warschauer, 2000: 1) and where "human to human" communication is not in focus. However, this term *one-CALL*, as mentioned in the introduction to this work, can be used to refer to a CALL setting in which the number of computers has been intentionally limited to just one, to create and promote interaction among learners as they collaborate around the computer.

For reasons of further clarification, therefore, I will resume this previous discussion in this chapter after taking a look, first of all, at new perpectives and understandings of CALL in the 21st century.

In short, this chapter reviews current perspectives of what could be considered and defined as 21st century CALL. It then defines and establishes a rationale for the one-CALL classroom within the current CALL landscape.

2.2 An ever-evolving view of CALL

As already indicated, the previous decades have brought the need to revisit the way in which we organise CALL environments for effective use more sharply into focus.

In a similar manner, and as a somewhat natural consequence of this, the importance of setting an agenda for new directions in CALL has also taken up yet another milestone position in discussions in the field since the mid 2000s. This has led to a number of more recent attempts at articulating the way in which CALL has developed and what we can learn from past experiences (Bax, 2011a and 2011b; Beatty, 2013; Chapelle, 2007; Chapelle, 2010; Hubbard, 2009; Levy &

Stockwell 2006). One of the things that still remains for us to continue examining more closely, however, is the way in which the very concept of CALL has expanded and can be thought to have somewhat outgrown its earlier, almost exclusive, association primarily with learners working *with* the computer within the so-called "structural" paradigm, for example, with software for drill and practice exercises (see Table 1).

Table 1 The role of CALL in structural, cognitive and sociocognitive frameworks (Kern & Warschauer, 2000: 13)

	Structural	Cognitive	Sociocognitive
What is the principal role of computers?	To provide unlimited drill, practice, tutorial explanation, and corrective feedback.	To provide language input and analytic and inferential tasks.	To provide alternative contexts for social interaction, to facilitate access to existing discourse communities and the creation of new ones.

Here, Kern and Warschauer (2000) show the development beyond this early "structural" focus by arguing that the way in which computers have been used in language learning seems to have developed almost analogue to the dominant theoretical perspectives on language learning purported over previous decades. These authors elaborate on this view by stating that, "[i]nterestingly, shifts in perspectives on language learning and teaching have paralleled developments in technology from mainframe to the personal to the networked computer...[T]hey also correspond roughly to three metaphors of computer-based educational activities posited by Charles Crook (1994): namely, a tutorial metaphor (computer-as-tutor), a construction metaphor (computer-as-pupil), and a toolbox metaphor (computer-as-tool)" (Kern 6 Warschauer, 2000: 7). While it must be admitted that this specific metaphorical trio is no longer very dominant in current CALL discussion, they have served as a catalyst for the triadic framework within which CALL development is most commonly defined. This is reflected in Kern and Warschauer's model above, for example, in which the role of the computer is defined in relation to three theoretical 'movements' in the trajectory of SLA. Using

a similar triadic structure, Bax (2003) also seeks to define CALL development, though as he argues, his model removes the emphasis from "phases" to "approaches".

In outlining three major approaches to CALL, Bax (2003) is also able to draw our attention to the nature of tasks, the type of student activity, the type of feedback, the role and attitude of the teacher, the position of the technology in the curriculum, the position in the lesson and the physical position of the computer (see Table 2). See also Levy & Stockwell (2006) for a comprehensive overview of models and approaches addressing established and emergent CALL.

Table 2 Approaches to CALL including a future perspective (Bax, 2003: 21)

Restricted, Open and Integrated CALL: an outline

Content	Type of task	Type of student activity	Type of feedback	Teacher roles	Teacher attitudes	Position in curriculum	Position in lesson	Physical position of computer
Restricted CALL								
Language system	Closed drills Quizzes	Text reconstruction Answering closed questions Minimal interaction with other students	Correct/incorrect	Monitor	Exaggerated fear and/ or awe	Not integrated into syllabus—optional extra Technology precedes syllabus and learner needs	Whole CALL lesson	Separate computer lab
Open CALL								
System and skills	Simulations Games CMC	Interacting with the computer Occasional interaction with other students	Focus of linguistic skills development Open, flexible	Monitor/ facilitator	Exaggerated fear and/or awe	Toy Not integrated into syllabus—optional extra Technology precedes syllabus and learner needs	Whole CALL lesson	Separate lab—perhaps devoted to languages
Integrated CALL								
Integrated language skills work Mixed skills and system	CMC WP e-mail Any, as appropriate to the immediate needs	Frequent interaction with other students Some interaction with computer through the lesson	Interpreting, evaluating, commenting, stimulating thought	Facilitator Manager	Normal part of teaching—normalised	Tool for learning Normalised integrated into syllabus, adapted to learners' needs *Analysis of needs and context precedes decisions about technology*	Smaller part of every lesson	In every classroom, on every desk, in every bag

While both Kern and Warschauer's (2000) sociocognitive-based definition of the role of the computer and Bax's (2003) focus on approaches cannot be considered parallel definitions of CALL as they seek to outline the development of CALL from different angles, they both place particular emphasis on the context in which CALL activities take place. It is, therefore, on this basis that they constitute an appropriate theoretical background against which to begin examining the use of the computer not only as one among a number of artefacts in the classroom setting, but also with particular regard to its position in the interplay among learners or what can summatively be described as its mediational role.

This might suggest that in current CALL classrooms, an understanding of the value of the computer should be expanded to reflect this dual role: that of artefact, on the one hand, and facilitator, on the other hand. While these two perspectives of the role of the computer are not new in and of themselves, it is an

understanding of their combined impact which drives the research presented and which offers substantial backing for ascribing good use to what has previously been referred to as the flipped version of the LTE. In this vein, the ensuing subsections attempt to examine new perspectives in 21st century CALL from a metaphorical point of view.

2.2.1 A computer as tool metaphor

Meskill (2005a) denominates the computer as tool (to be understood somewhat differently from Crook's (1994) toolbox image) as a "current, predominant metaphor...[where] [l]ike other human tools [the computer] can be used to assemble, construct, attach, detach, disassemble, connect, and fashion products. Like other tools, their use influences the ways we think, behave, and communicate. By careful, pedagogically grounded uses of computers, educators can orchestrate highly involved meaningful learning of all kinds" (Meskill, 2005a: 33). By so doing, the author hints at the broad opening for a variety of uses to which the computer can be put to serve a multiplicity of learning objectives. This view seems to be somewhat contradicted by Keil-Slawik (2006) who suggests that the use of the metaphor "computer as tool", may in fact be limiting a broader spectrum of potential which can be ascribed to the computer in the educational setting (see also Hampel & Keil-Slawik, 2001). Though Keil-Slawik (2006) does not offer an enumeration of this "greater potential" which presumably goes beyond the items mentioned above, he does, however, allude to the unlimited creativity and skill expected of teachers in CALL contexts as they capture and capitalise on what Meskill (2005a) refers to as the "community and meeting place" metaphor and the resultant "rich teachable…computer-stimulated moments" (Meskill, 2005a: 34).

This latter metaphor, though used by Meskill (2005a) to refer to telecollaborating, also has implications for the non-network CALL classroom, since, as will be argued later on, the computer in the classroom also offers this meeting space for shared thinking and joint reshaping of products.

Warschauer (2005) further situates this view within a sociocultural perspective by highlighting the mediational role of the computer in this context. He states, "Yes, technology is just a tool, but, like all tools, it mediates and transforms human activity" (Warschauer, 2005: 48).

It is, therefore, as somewhat of a ripple effect that the computer can not only be seen as a tool, but also as taking on an almost personified role as a social agent in its own right; not in the sense of its architectural composition, but in the sense that it activates a course of action, reaction and interaction which gives evidence of its "participant" value. This is not to suggest that the focus should be entirely on the computer, but rather on the processes generated within the context in which the computer is used to promote what Meskil (2005) describes as this "well-orchestrated" use.

2.2.2 The social function of the computer

As has been seen, the computer as tool, in Meskill's (2005a) understanding, for example, identifies this role of the computer as being linked to opening opportunities for collaboration from a sociocultural perspective. In this way, the computer is no longer simply objectivised (seen as a mere object) producing material to be worked on, but rather as having a social function. Kern and Warschauer (2000) also elaborate on this view by stating that "[t]his metaphor emphasizes the role that computers play as mediational tools that shape the ways we interact with the world (e.g., accessing and organising information through databases, spreadsheets, and word processors)." (Kern & Warschauer, 2000:11).

Towards the turn of the 21st century, however, this mediational role was expanded to include the potential of the computer to support "human to human" interaction. This was seen as an even more authentic engagement for language learners, since the media now facilitated the development of discourse communities, that is, the interaction among communities of learners was now being mediated by the computer, a scenario in which language is put to use for the purpose of communicating, exchanging, challenging and negotiating understandings and ideas.

Though enriching the role of the computer in its mediational capacity, I argue that this view still somewhat limits the social role of the computer. By "the social role" of the computer, I refer here to the degree to which the computer is considered (seen in operational terms) to mediate the learning experience. In other words, as an artefact with a social function, I argue that the computer would have to provide some distinctive feature which other artefacts in the language learning context do not provide to support meaningful social interaction.

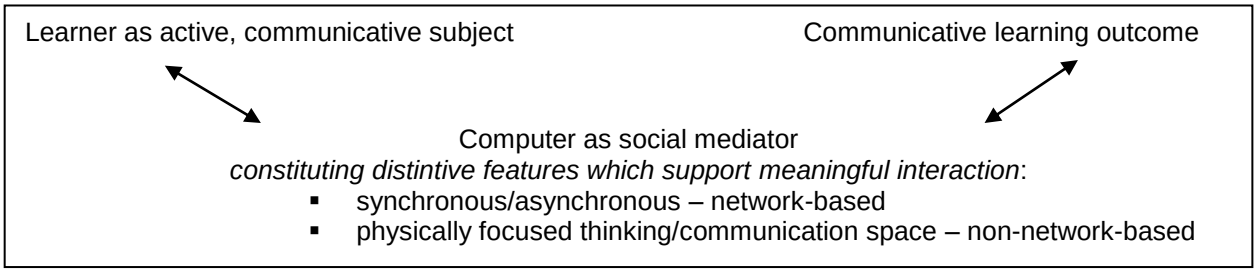
Looking at this argument from the perspective of CMC, this social function seems to be partially fulfilled in the sense that communication, as one, if not the, key objective of the language classroom, is being facilitated across time and place and learners are able to interact via computer networks in new ways (for example, synchronously or asynchronously).

Kern and Warschauer (2000) make the point clear, however, that the distinctive "network" function of the computer needs to be supplemented by attention to the process by which communication is made meaningful via the computer. In analysing concepts and practices of Network-Based Language Teaching (NBLT), these authors state that "[t]he computer, like any other technological tool used in teaching (for example, pencils and paper, blackboards, overhead projectors, tape recorders), does not in and of itself bring about improvements in learning. We must therefore look to particular *practices of use* in particular contexts in order to begin to answer the question. Furthermore, these practices of use must be described as well as evaluated in terms of their specific social context" (Kern & Warschauer, 2000: 2 – italics in original).

Back in the non-network classroom, however, these distinctive features which can serve to operationalise the mediational role played by the computer still remain to be more clearly defined. This suggests that while it can be argued that a move toward CMC does offer additional options for social interaction, it should also be appreciated that within the face-to-face classroom context, the computer can also facilitate social interaction in newly defined ways. Implicit in this argument is also the idea that the design of the context in terms of the use of specific mediational tools, for example, contributes to determining the extent to which learners can be seen to be engaged in meaningful learning activities.

This line of argumentation is illustrated in Figure 2.1:

Figure 2.1 The social mediational role of the computer in network and non-network contexts



The clear implication here is that if the computer is to be considered to be contributing in a meaningful way within the language classroom, the focus needs to be on its social function. It is for this reason that Bax's (2003) idea of defining CALL in terms of "approaches" to the use of the computer, serves as an appropriate starting point to arrive at the key features and focus of 21st century CALL. In other words, rather than just seeing and defining the role of the computer, Bax (2003) argues for a more elaborate articulation of the CALL context, which helps us to better examine how our practice of use facilitates or constrains effective use.

While Bax (2003) seems to be arguing for CALL to support communication in a genuine way which he admits we are still a long way from reaching, an even more interesting aspect of his proposal is his emphasis on achieving a state of "normalisation" in which the computer actually becomes part of the composition of the classroom. This he identifies as a potential ultimate goal of the 21st century CALL classroom.

Here, what is of particular relevance to the present research is the view that the true potential of the computer in the CALL context is best arrived at if new concepts surrounding the role of the computer are adopted.

The main argument is, therefore, for a concept of the social function of the computer which helps to broaden the understanding of its potential. This further implies, as postulated by the theoretical stance taken in the following chapter, that a move should be made away from simply recognising the value of the computer in terms of its role to support cognitive development as an isolated desired learning outcome. As argued, there should also be an equally strong appreciation for the impact of social interaction as seen within the realm of sociocultural theories of learning.

Having had a look at two major contemporary perspectives on the way in which CALL has been and can be defined, the following section will now focus in on definitions of the computer which approximate an appreciation of its social function within the CALL classroom context.

2.3 Reviewing and expanding the "Limited Technology Environment"

As previously suggested, a standard definition of an LTE (and here I refer the reader back to Figure 1.1) can be one which focuses on the unavailability, lack of access or poor use of computers.

While these descriptors might imply that learners cannot readily adequately benefit from computer-assisted activities in such an environment, it should be recognised that the number of computers available is actually not the deciding factor in the question of whether or not students are being effectively engaged. The greater implication is the use to which even limited numbers of computers are put, that is, whether or not learners are making "good use" of the technology or engaging in pedagogically meaningful activities orchestrated by the teacher within the CALL context.

The focus then, and as argued throughout this work, is on making qualitatively good use of the technology by quantitatively limiting it.

This latter perspective can be considered an appropriate definition of an effective LTE. The key distinguishing feature of this "flipped" version of the concept of "limited technology" therefore, is that its design is based on a deliberate decision to limit the number of computers in order to allow learners to engage with each other in activities around the computer, a constellation which automatically promotes interaction and which at the same time, has the potential to facilitate what can be considered a more integrated (social) positioning of the computer in the classroom setting. In other words, this alternative definition of a LTE, as it were, focuses on limiting numbers while providing immediate, but optional, access for effective use (see Figure 1.2), particularly in terms of the way the computer supports interaction.

The one-CALL classroom, the specific terminology adapted to define and depict the settings in this research, therefore, represents one such flipped version and refers to a classroom context which offers immediate access to one computer unit which is designated and available on demand to the learning group.

In each of the settings in which the studies in this research project were conducted, the pupils worked with a laptop which was brought into the classroom. This meant that the laptop was available for use during each of the lessons conducted within the period of research. In this way, issues of the logistics of accessing the school's computer laboratory (as three of the four schools in the studies possessed a computer laboratory – the fourth having required each student to be in possession of a personal laptop) did not have to be addressed and no time was lost in relocating the class from their room to the laboratory.

This issue of logistics, as will be discussed in more detail in the following section in terms of Chambers and Bax's (2006) consideration of issues affecting normalisation and revisited in the course of the discussion of the case studies, is a very crucial issue in appreciating the value of the non-network CALL classroom.
This allowed the classroom to constitute a so-called integrated CALL context in the sense that the computer was a "daily" part of the classroom structure, rather than an occasional addition.

2.3.1 Rationale for the one-CALL classroom

The definition and scenario described above can be seen as broadening our understanding of ways in which CALL can be adopted into 21st century classrooms. This scenario offers, for example, an appropriate and realistic option for school teachers attempting to integrate the computer in a "normal" way within their classroom even in school contexts where an abundance of computers are not readily available to serve language learners. This particular status, referred to by Bax (2003) as a state of normalisation, and which offers language teachers a meaningful goal for classroom CALL, can be arrived at if a number of conditions are met.
In referring to this issue of locating the computer within the classroom, for example, Chambers and Bax (2006) point out that "[f]or normalisation to take place, CALL facilities will ideally not be separated from 'normal' teaching space" (Chambers & Bax, 2006: 470).
This suggests that, for some contexts, the one-CALL classroom could be considered the first step in approaching this state of the normalisation of CALL, as this would certainly reduce the challenge of accessing CALL facilities outside the classroom itself. In other words, and as I have proposed, this deliberate decision to limit the number of computers in the CALL classroom context to a single unit, for the particular purpose of completing work in a group activity, for example, represents what one can consider meaningful and appropriate use of technology.
This proposal made by Bax (2003) to achieve a state of normalisation is one which then ultimately aims at having "computers ... used every day by language students and teachers as an integral part of every lesson, like a pen or a book ... They will not be the centre of any lesson, but will play a part in almost all. They will be completely integrated into all other aspects of classroom life, alongside

coursebooks, teachers and notepads. They will go almost unnoticed" (Bax, 2003: 23).

However, the issue of access addressed above is not the only consideration which needs to be made if one were to identify a rationale for setting up a one-CALL classroom as a 'normal' CALL environment.

Chambers and Bax (2006) discuss a total of 11 issues which need to be addressed if normalisation is to be achieved (see Table 3).

Table 3 Issues significant in the normalisation of CALL (Chambers & Bax, 2006: 477-478)

Logistics	1) CALL facilities should ideally not be separated from 'normal' teaching space. 2) The classroom should ideally be organised so as to allow for easy move from CALL activities to non-CALL activities. 3) Teachers may need more additional time for preparation and planning.
Stakeholders' conceptions, knowledge and abilities	4) Teachers and managers need to have enough knowledge of and ability with computers to feel confident in using them. 5) Conceptions on the part of different stakeholders, including teachers and management, concerning the role of computers in language learning need to be of a type conducive to integration and normalisation. 6) Teachers and managers need to avoid the 'technical fallacy', namely the view that the main determinant of success or failure is the hardware and software, or any other single factor. They should be aware that the success of CALL in their classrooms depends on several interconnected factors, all of which may need to be considered.
Syllabus and software integration	7) CALL should be properly integrated into the syllabus, and support provided for teachers who may be uneasy about their new roles. 8) Progress may be enhanced by the use of 'authorable' CALL material which allows teachers to tailor the CALL activities better to fit the existing syllabus aims, as opposed to the use of imported 'closed' materials.
Training, development and support	9) Teacher training and development could be best offered in collaborative mode rather than in 'top-down' expert-to-novice mode. 10) Teachers' concerns about technical failures, and their lack of skills to deal with such failures, should be addressed and overcome by means of reliable support and encouragement. 11) Technical assistance is important, but is insufficient on its own in supporting teachers towards fully normalising technology in their teaching. Teachers need pedagogical support also.

While it cannot be claimed that the one-CALL classroom in this research responds to all of these issues, it can, however, be argued that it does approximate Bax's (2003) definition of a 'normal' CALL environment by addressing a number of the criteria outlined above to some extent.

Alongside access, Chambers and Bax (2006) identify the move from CALL to non-CALL activities as another logistic issue which can impact on the normalisation of technology.

In such a setting, pupils have the chance to use the computer if and when they deem it appropriate and return to other activities taking place in the classroom which are not computer-assisted.

In addition to the potential for offering the computer a 'normal' position in the classroom, as research already conducted in the early 1990s (Legenhausen & Wolff, 1990, 1991; Dam et al., 1990) suggested, the potential of non-network classroom CALL should not only be looked at in terms of effective use of specific software, for example, but there should also be a complementary focus on other important events like the social interaction in which students engage.

In their research, Legenhausen and Wolff (1990), for example, initially focused on identifying the benefits, as well as the drawbacks of using both language specific and commercialised software. However, in addition to identifying the limitations of a simulation software, they admitted to having ultimately recognised the communicative potential of this setting – a setting in which students were supposed to be working with the software. They point out "it should also be emphasised that our data provide evidence that the students were offered many talking points and occasions for authentic communication, so that they often developed a genuine need for communication" (Legenhausen & Wolff, 1990: 12). These authors even suggest further that the software would have more success if judged within the context of a "communicative activity". They conclude that "[i]ts success in the foreign language classroom will then largely depend on the teacher's imagination and ingenuity" (Legenhausen & Wolff, 1990: 12).

While at that time these incidents of social interaction in non-network CALL were seemingly peripheral, 21st century CALL has certainly given social interaction more of a central focus, thus adding interaction to the repertoire of goals of CALL in the classroom.

For the non-network CALL classroom, however, the challenge therefore remains to identify meaningful ways in which interaction among learners might be best facilitated using the computer. This further suggests that social interaction should not just be isolated as a valuable outcome of CMC, but it should be seen as the hub around which other types of CALL activities revolve, and as argued here, particularly those taking place within the non-network classroom.

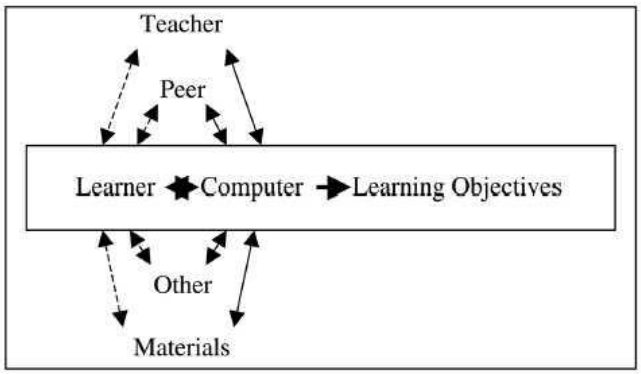
If, then, communication is considered one of the major goals of the language classroom and we were to apply the afore-mentioned findings as lessons to be learned for the 21st century CALL classroom, it seems safe to say that if we are actually creating opportunities for genuine communication in the non-network CALL context – via the use of the computer – its use can in fact be denominated "good use" as defined by Meskill (2005a), for example. The implication here is that once communication is being facilitated, the medium by which it is supported can be considered as being put to good use.

Though a seemingly simple equation, as the research findings show, it is this "communication space" which makes visible the observable features of interaction and mediation taking place in the AS of the one-CALL classroom.

2.4 Conclusion

In summary, it can be said that the state of normalisation recommended by Bax (2003) might at first seem to be somewhat idealistic as it depicts the computer as an almost invisible artefact. On closer examination, though, one notices that this state actually articulates in concrete terms the position called for by other CALL researchers like Chapelle (2000) and Levy and Hubbard (2005), for example, who, in defining the role of the computer, suggest that it needs to be viewed in terms of its mediational role, "so that the computer, the language learner and the language learning objectives are at the heart of the matter" (Levy & Hubbard, 2005: 146) (see Figure 2.2). It is, therefore, this dynamism, as I refer to the interaction between the different agents in this context, and the mediational role of the computer in particular, which form the focus of the studies carried out.

Figure 2.2 A simple conceptualisation of the CALL perspective (Levy & Hubbard 2005: 146)



As interaction, therefore, constitutes such a central focus of this research, the following chapters will also situate the place and significance of interaction in language learning research (Chapter Three) before moving on to consider a framework from which it can be adequately analysed (Chapter Four) within the context of the one-CALL classroom.

3 Interaction and the cognitive-social debate

A discussion on the cognitive-social debate, alternative approaches to SLA and perspectives on interaction within these paradigms with emphasis on the role of language and context

3.1 Introduction

The importance of social interaction within the language classroom as an integral part of and complement to the contextual factors which contribute to language development has gained increasing attention in what has come to be denominated as the cognitive-social debate. This debate within the field of SLA, positions cognitivists – proponents of language learning as a process taking place within the mind – almost in direct oppostion to adherents to socially oriented theories of learning.

While, as Larsen-Freeman (2007) suggests, this debate has been an ongoing one over the past few decades, it was following the call by Firth and Wagner (1997) "for an enlargement of the parameters of the field to include a social and contextual orientation to language" (Larsen-Freeman, 2007: 775), that this debate was revived and with it, further support for the claim to interaction as a key contributor to optimising conditions for language learning.

As a consequence, this debate also brought the dichotomy between two dominant theoretical perspectives on interaction in the field, that is, from the interactionist perspective and from the sociocultural theory perspective, more sharply into focus. This present work approaches the perspectives on interaction from the latter theoretical orientation. The basis on which this particular perspective has been chosen is owing to the fact that it is precisely the social and contextual factors influencing the engagement within the classroom which are under investigation.

This chapter, therefore, starts off by offering an overview of the multiple perspectives from which SLA has more recently come to be examined. The move away from the traditional view of SLA being more frequently aligned with the cognitivist perspective toward what Block (2003) calls its "social turn" is discussed. Then, drawing on the seminal work of Firth and Wagner (1997) as a starting point, this chapter will also explore the key issues in the cognitive-social debate which have specific relevance for the research at hand. In so doing, it aims at making a case for the value of approaching classroom research on interaction from a sociocultural theory perspective, particularly as it relates to arriving at an

understanding of the architecture of the classroom. In other words, the chapter details the way in which researchers from different theorectical standpoints have argued for supporting social interaction within the classroom as this can be seen as a key factor in bringing about improved conditions for language learning.

3.2 Multiple perspectives on SLA

Citing Long and Doughty (2003), Atkinson (2011a) reiterates what he calls the authoritative view of cognitivist researchers in the field of SLA over the past few decades to see second language learning as a process almost exclusively located in the mind of the learner: "A discernible trend [in SLA studies], therefore, especially in the 1980s and 1990s, has been for increasing numbers of researchers and theorists, rationalists all, to focus their attention on SLA as an internal, individual, in part innately specified, cognitive process – one that takes place in a social setting to be sure, and can be influenced by variation in that setting and by other interlocutors, but a psycholinguistic process, nonetheless, which ultimately resides in the mind-brain, where also lie its secrets" (Long & Doughty cited in Atkinson, 2011a: 15).

Inherent in this view is the recognition of the role played by both the social setting and other learners in the learning experience. However, these are seen only as possible, somewhat marginal factors.

Atkinson (2011a), therefore, identifies six major approaches which have moved away from the dominant cognitivist orientation of the past few decades and have opened new potential for the exploration of SLA. The following sub-section provides a brief overiew of these approaches and highlights, from the perspective of their proponents, their guiding principle from the social perspective particularly as it relates to language and the language learning context.

3.2.1 Alternative approaches in SLA research

One widely accepted approach which represents the "social turn" in SLA research is the sociocultural approach. It places clear focus on the concept of mediation and the way in which language is used in this process. In this view, language is considered a semiotic device whose function it is to mediate communicative activity (Lantolf, 2011: 24). It is here that the view of SLA takes a significant turn away from cognitivism and where the term *acquisition* is somewhat subsumed under the term *use*: "[T]he structure of language tells us about its power to

mediate our social/communicative and mental lives. Language's power resides instead in its use value" (Lantolf, 2011: 25).

This social turn mentioned above, can thus be seen in the fact that research looking at SLA from a sociocultural perspective, predominantly examines the function of language through its use and further impact on the very social engagement which it brings about. In other words, the unit of focus is the process which learners engage in as they use language to mediate their learning within the language classroom.

Swain and Lapkin (2002) focus on this process by approaching their research into peer interaction from a sociocultural orientation. Placing specific emphasis on the function of "talk" in collaborative dialogue, these researchers examine the cognitive process made evident by peer-peer dialogue as students engage in metatalk: "Their collaborative efforts, mediated by their dialogue, reveal what cognitive steps they took to be able later to use their constructed knowledge individually" (Swain & Lapkin, 2002: 287).

This research might be considered one which represents a crossroad in SLA research as the cognitive processes under examination are revealed and examined against the sociocultural context of the interaction.

It, therefore, exemplifies how the collaboration facilitated by the dyadic context of learning, that is, peer-peer interaction, provided the type of scaffolding necessary to help the learners complete the task which was assigned. The symbolic tool employed – metatalk about the language – functioned "to consolidate and reorganise knowledge of the L2 in structural and rhetorical aspects and to make this knowledge explicit for each others' benefit" (DeGuerrero & Villamil, 2000, cited in Swain & Lapkin, 2002: 287).

Taking a somewhat different angle and focusing more on the role of context and interaction in SLA, Storch (2002) approached her research on peer interaction from a cognitive developmental perspective where the focus was on comparing different patterns of interaction. This, she claimed, allows for a clearer understanding of how the relationships between learners, for example, might impact on the degree of successful completion of the task or how the way in which they interact might influence the extent to which language learning can be said to take place (Storch, 2002). In her research, the context, defined by peer interaction,

was also carefully examined over time to determine if factors such as task and the passage of time impact on the nature of the interaction.

This link between contextual factors – both individual and social – and the nature of interaction also seems to play an ever-increasingly important role in other alternative approaches in SLA research.

The complexity theory is another approach which views language use (as evidenced by learners interacting with each other, for example) as a significant social factor in SLA and as inextricably linked to other contextual factors: "Language [is] a dynamic set of patterns emerging from use… Language, its use, its evolution, its development, its learning and its teaching are arguably complex systems. Thus, complexity theory offers a way to unite all these phenomena" (Larsen-Freeman, 2011: 52).

Larsen-Freeman (2011) goes on to clarify the role played by language in adapting to *contexts of use*. Here, language is defined as both emerging through the interaction among learners and is influenced by the cultural context in which it is produced. This is closely linked to the sociocultural understanding of context in which interaction is shaped by social and cultural factors.

Similar to the sociocultural approach, complexity theory also purports that learners play an active role in their learning environment in the sense that they strategically select from the resources available in the learning environment to be able to function successfully. This may include, for example, the choice to use their native language (L1).

The specific focus of the complexity theory approach is defined by Dörnyei (2009) as the dynamic interplay between learners and their learning environment. However, Dörnyei (2009) argues that there is still much road to be covered in investigating this interplay so that it can be represented as a truly integrated system.

These two issues of the active role of the learner and contexts of use are also central points in the identity approach. Norton and McKinney (2011) summarize this approach as providing a basis on which to account for the impact of the cultural context. In their summary of this approach, they acknowledge that multiple contextual factors (mainly social), such as power relations, account for the varying affective profiles by which learners can be defined (Norton & McKinney, 2011: 73). This implies, for example, that learner identity is culturally shaped by the social

factors in operation within the learning context and is, as such, in a dynamic process in terms of learners' affective state and the roles which learners assume within the classroom.

Following on from the identity approach, language socialisation approaches focus on language as the learning object. The focus in this regard is not from the discrete perspective of the production of its constituent parts by learners, but on the actual learning process. Duff and Talmy (2011) state that similar to other alternative approaches to SLA, within language socialisation approaches, "…there is the acknowledgement that L2 learning is mediated not only by social agents, but also by other affordances of the learning setting, such as modality (oral, written, visual, electronic) and additional semiotic resources, including physical artifacts, other people, and language itself" (Duff & Talmy, 2011: 98-99). This approach, like those previously discussed, allows for an examination of these affordances within the learning setting which can help to define the specific factors which contribute to optimal conditions for language learning.

A further alternative approach to SLA which zeroes in on language from the social perspective is what Kasper and Wagner (2011) term the conversation-analytic approach to SLA. In this way, these authors attempt to use the principles guiding conversation analysis from an ethnomethodological perspective to establish it as an approach to understanding interaction within social structures. In this approach, verbal exchanges and their ensuing impact on interaction are at the heart of the analysis of the process of language learning. Here, a dual perspective on interaction, that is, the language used by learners to establish the social context as well as the influence of social practices in establishing social links among learners ,can be said to be its distinguishing features. Kasper and Wagner (2011) express this dynamic as follows: "[Conversation Analysis] focuses mainly on the analysis of talk-in-interaction… In talk, practices such as *turn-taking*, *turn-construction* and *repair* are fundamental. Through them speakers organise the intersubjective meaning of any activity or practice" (Kasper & Wagner, 2011: 122 – italics in original).

Finally, the sociocognitive approach to SLA is yet another alternative approach which promotes the importance of focusing on the social environment in language learning. Its particular slant is that learning is a holistic process which takes place in a variety of situated activity systems (not exclusively in classrooms) and as such

is facilitated by real-world experiences (Atkinson, 2011b: 151). This latter author, therefore suggests that social adaptation and cognition should not be looked at as separate entities, but rather as an integrated and continuous process.

3.3 The Interactionist approach and the sociocultural approach to interaction

These alternative approaches presented above have, in recent years, begun to feature more prominently in SLA research and a number of researchers continue to call for even greater focus on the social dimensions of language learning. One area which is notably central in all of these approaches and which has been explored more commonly in the sociocultural approach to SLA is that of interaction.

In this section, this overarching theme which constitutes the focus of this chapter, that is, the perspective on interaction in the cognitive-social debate will be further elaborated upon.

3.3.1 Interaction from a combined perspective

Preceding what has been referred to earlier in this chapter as the “social turn” (Block 2003), interaction in SLA research was seen as the basis for acquisition from the point of view that it served as a channel via which the negotiation of meaning – a key tenet in the interactionist perspective – took place. The goal of SLA research as posited by Gass (1998), on behalf of herself and her colleagues working in the input/interactionist paradigm, “has never been to understand language use per se (i.e. use is not an end in itself), but rather to understand what types of interaction might bring about what types of change in linguistic knowledge” (Gass, 1998: 84).

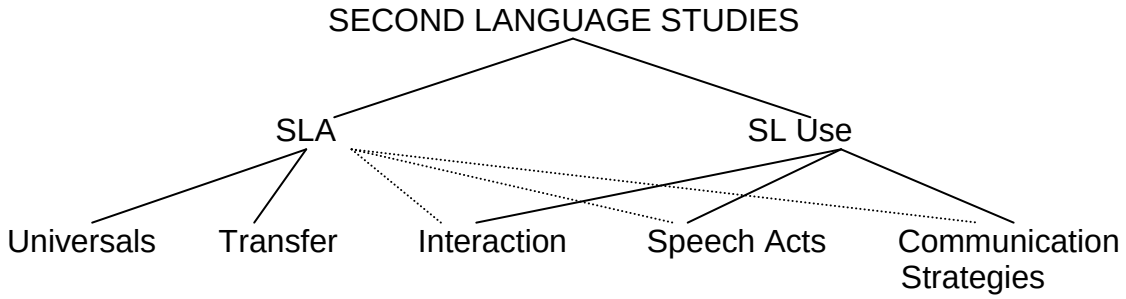
This declaration made by Gass (1998) came in response to Firth and Wagner’s (1997) criticism about making a distinction between “acquiring” language and “using” language. These authors suggest that making such a distinction only served to create an unnecessary dichotomy in which learners’ language use, promoted in the context of their interaction, is devalued.

Interaction can, therefore, be said to have different degrees of emphasis and value depending on the theoretical orientation from which it is being viewed.

It is for this reason that Gass (1998) called for clarity between the various orientations in SLA research. This resulted in her proposal of a differentiated

characterisation of the different areas of research focus under the umbrella term of "Second Language Studies" (see Figure 3.1).

Figure 3.1 A characterisation of research in "SLA" (Gass, 1998: 88)



From this representation it is not only clearly acknowledged that interaction features both from the perspective of 'acquisition' and of 'use', but that it is as much a feature of cognitive research as it is from the perspective of social theories, as has also been alluded to in Section 3.2.

Interestingly, however, there has been some attempt to find a common ground for research on classroom interaction from both the cognitive and social perspectives.

One example of research from the input/interaction perspective which demonstrates the way in which interaction has traditionally been positioned within SLA and which at the same time merges with sociocultural perspectives on interaction is the research carried out by Swain and Lapkin (1998)

As Block (2003) claims, these authors have sought to draw on frameworks outside of the strict input/interactionist model in an effort to broaden understandings of interaction in the field of SLA. This opens a potential new path for what might come to be considered an "expanded" view of the field.

Similar to their 2002 article exemplifying the sociocultural theory approach mentioned in Section 3.2.1, Swain and Lapkin's (1998) article in the *Modern Language Journal*'s special issue "The Role of Input and Interaction in Second Language Acquisition" can be considered another apt example of this expanded perspective.

In this latter research, these authors examine both the communicative as well as the cognitive role of the language used by the learners.

A very important aspect of this research is the unit of analysis – Language Related Episodes – which was selected to investigate the juxtaposed communicative/ cognitive roles of the language.

In their study, Swain and Lapkin (1998) show a balanced appreciation for this combined role: “Language is simultaneously a means of communication and a tool for thinking. Dialogue provides both the occasion for language learning and the evidence for it. Language is both process and product” (Swain & Lapkin, 1998: 320).

This makes clear that these two distincit, yet arguably complementary, research orientations have possibly reached a crossroad. As such, the previously devalued status of interaction in terms of its social function in the language classroom has been elevated.

In examining this social function of language, researchers adopting a full-fledged or combined sociocultural perspective have, consequently, begun to draw greater attention to the contextual factors at work in the learning environment. In other words, in this research paradigm, the ways in which learners interact (intrapersonally, interpersonally and with physical artefacts) are brought more clearly into focus.

3.3.2 Interaction on the intrapersonal and interpersonal levels

Looking more closely at the value of contextual factors in the language classroom, Norton and McKinney (2011) suggest that “[a] shift from seeing learners as individual language producers to seeing them as members of social and historical groups calls for an examination of conditions for learning, or the appropriateness of practices, in any particular community” (Norton & McKinney, 2011: 79).

The way in which the interactional practices are supported within the learning community is, therefore, important in creating optimal conditions for learning.

As mentioned previously, whether with a primary focus on language acquisition or on language use, researchers concerned with examining the specific issue of optimising conditions for language learning seem to agree on the fact that language development is supported both by intrapersonal as well as interpersonal activities. The point of diversion has simply been which of these activities carries greater importance for making statements about language development.

This concept is elaborated on by Ellis (2005) in the context of instructed language learning, for example. Ellis argues that both intrapersonal and interpersonal activities play complementary roles in the language classroom. In evaluating a number of guiding principles for instructed language learning, Ellis (2005) identifies the specific relevance of promoting both of these types of activities. Articulated in the form of recommendations, Ellis (2005) proposes that:

"Principle 1. Instruction needs to focus on implicit knowledge" (Ellis, 2005: 214), and "Principle 2. Opportunities for interaction in the foreign language need to play a central role within the classroom" (Ellis, 2005: 219).

Implicit knowledge, according to Ellis (2005), "… is held unconsciously and can only be verbalized if it is made explicit" (Ellis, 2005: 214). This implies that the cognitive processes taking place in the mind – the intrapersonal activities – need a venue where they can be verbalised if they are to become meaningful or of value to the learner. It is here, that the potential held in social interaction – the interpersonal activities – can be seen to be of greatest relevance. It is this social "forum" which provides learners with greater potential for successfully engaging in the learning process, by means of which they are able to make their knowledge explicit through further co-construction of this knowledge and of language products.

From the sociocultural perspective on learning, this ultimate goal of instructed learning would be best achieved if the learning context were to allow learners the chance to interact in a meaningful way. This means that learning arrangements, for example, which allow learners to co-construct language products, as opposed to exclusively concentrating on the form of the language per se, are more favourable to the "verbalisation" which makes implicit knowledge explicit and which, according to Ellis (2005), is more readily assimilated.

Put another way, this implicit knowledge, which is established partly through intrapersonal processing is, consequently, externalised by opportunities for interaction. This suggests, then, that both intrapersonal and interpersonal activities can be positively supported by the focal role which the interaction is allowed to play in the classroom.

Boyd and Miller Maloof (2000), in looking at the potential role of creating greater opportunities for "student talk", which can be considered to approximate natural language, also state that it is through promoting opportunities for classroom

community building, where learners can support each other and where solidarity is a consequence of this interaction, that the potential of classroom interaction is best exploited.

These perspectives strongly support creating a context within the classroom which allows learners to experience learning within a "location" which facilitates learner development through the interaction afforded on both the intrapersonal level as well as on the interpersonal level. This is reminiscent of one of the fundamental tenets of the constructivist view of learning in which "learning must be regarded as an active and collaborative process of knowledge construction" (Rüschoff & Ritter, 2001: 224). In this sense, the process of language learning is considered to rest on the merging of these levels of cognition.

Beyond the constructivist perspective, however, and as hinted at in the discussion in Section 3.2.1, these levels constitute important aspects of the sociocultural context within which the language learning process can be said to be significantly or holistically framed as it incorporates contextual factors in this process.

In addition to looking at the role of the "context" as it impacts on and shapes interaction from the sociocultural perspective, emphasis also needs to be placed on other issues which are related to the exploration of interaction within the classroom.

In the following section, a select range of key issues related to promoting interaction in the classroom which have emerged within the cognitive-social debate will be presented. After summarising this range of issues, the role of context and the social function of language (including the use of L1) in interaction will be discussed. Additionally, a brief look will be taken at the role of learner identity and the role of resources as these areas also bear relevance to an examination of the interaction in the research projects reported on in this work.

3.4 Key issues promoting interaction in the cognitive-social debate

As synthesised in the *Modern Language Journal*'s 2007 supplementary issue, the open debate ignited by Firth and Wagner's (1997) call for "a reconceptualisation of SLA as a more theoretically and methodologically balanced enterprise that endeavours to attend to, explicate, and explore, in more equal measures and, where possible, in integrated ways, both the *social* and *cognitive* dimensions of S/FL use and acquisition" (Firth & Wagner, 1997: 286 – italics in original) met with mixed reactions among researchers in the field.

In Firth and Wagner's (1997) view, the field of SLA could, therefore, only be enriched through a balanced approach to SLA. These authors proposed three specific areas for reconsideration: "a) a significantly enhanced awareness of contextual and interactional dimensions of language use, (b) an increased emic (i.e. participant-relevant) sensitivity towards fundamental concepts, and (c) the broadening of the traditional SLA data base…better able to explicate the processes of S/FL acquisition, and better placed to engage with and contribute to research commonly perceived to reside outside its boundaries" (Firth & Wagner, 1997: 286).

Larsen-Freeman (2007) in attempting to capture the divergent views of supporters of both paradigms identifies 12 issues of contrast at both the theoretical and methodological levels (see Table 4).

Table 4 Cognitive and social views of SLA contrasted (Larsen-Freeman 2007: 780)

	Cognitive SLA (Mainstream)	Social SLA (Challenger)
1. Role of context	Social context is the site in which L2 acquisition takes place; however, if you change the context, the acquisition process remains the same. The goal is to search for universals that transcend individual contexts.	Social context influences performance. Social factors are related to systematic variation in learner language. Each context is unique although certain generalizations, such as turn-taking principles or observations about repair, can be made.
2. Nature of Language	Language is a mental construct.	Language is a social construct.
3. Nature of Learning	Change in mental state.	Change in social participation.
4. Primary Research Focus	The primary focus is on language acquisition (how people learn a language, not how they use it). Given this focus, what is important are cognitive factors of knowledge representation, processing, and recall.	The primary focus is on language use. Language use and acquisition cannot be easily separated. Therefore, what is important are social/interactional factors and their effect on the language used.
5. Objects of Inquiry in Language-Focused Research	What is of interest is the aggregation and increasing complexity and control of linguistic structures by learners.	What is of interest are discursive routines of communication processes. There is also a need to look at the purpose of talk; a functional perspective to language is most helpful.
6. Identity of Research Participants	The salient identity of the research participant in a research study is that of a learner.	The identity that the research participant adopts makes a huge difference, and it may not be that of learner. For

		example, in the moment, a learner may not "perform his or her competence" because he or she might want to align socially with another less competent peer.
7. Perspective on Evaluating Learners' Progress	Progress is measured by where along the route toward target proficiency the learner is as indicated by the learner's linguistic performance.	What is at issue is what the learner does with the resources that are available. Look at what the learner does to get his or her message across, not what the learner cannot do.
8. End State	The end state occurs when learner language and target language are congruent or where learner language is stabilized/fossilized.	There is no end state.
9. Philosophical Orientation	Scientific, value-free inquiry Modernist.	A critical view Postmodernist.
10. Research Site	Varied, sometimes natural environments, sometimes experimental, where data are elicited.	Varied contexts where language is used naturally and heterogeneously.
11. Primary Level of Research Conceptualisation	*Macrolevel* idealizations, in other words, native speaker, learner.	*Microlevel* social relationships that are being achieved through talk in progress.
12. Attitude Toward Acceptance of SLA Theories	One theory will prevail; empiricism will determine which. Positivist.	Multiple theories are welcome, even necessary. Relativist; pluralist.

These 12 issues represent both contrastive (cognitive-social) views from the research perspective as well as from the perspective of the nature of the learning environment. The discussion will now, therefore, turn to an examination of those key issues which are closely related to supporting interaction in the learning environment and which as Firth and Wagner (1997) suggest, more directly address the contextual and interactional aspects of language use. Using Larsen-Freeman's (2007) summary above as a starting point, these can be identified as the role of context, language, learner identity and resources.

3.4.1 The role of context

In Larsen-Freeman's (2007) definition above, from the cognitivist perspective, context appears to be synonymous with and limited to a literal spatial "location", in other words, a place where learning takes place which is independent of the learning process. The implication here is that context does not influence the learning occurring in this particular "space" per se, but simply refers to the event location. In contrast, the social perspective on learning supports the concept of the

context playing a role in the learning process in the sense that it is inextricably linked to the learning process. This suggests that the language in use and the function to which learners put this language is influenced to some degree by the particular learning environment.

Song (2010), in addressing the role of context in discourse analysis, distinguishes between linguistic context, situational context and cultural context. By linguistic context, he refers to "the context within the discourse, that is, the relationship between the words, phrases, sentences and even paragraphs" (Song, 2010: 876). While the role of context from this linguistic perspective is a relevant part of discourse analysis, it is Song's (2010) definitions of situational context and cultural context which are of primary importance in this discussion.

His definition of situational context, which he synonimises with "environment, time and place, etc, … and also the relationship between the participants" (Song, 2010: 877), seems to approximate the perspective of the cognitivists on the role of context. This can be understood to be the external factors "surrounding" the learning process, including other learners and "the kind of social relationship within which communication is taking place" (Song, 2010: 877). The social context is, therefore, recognised by cognitivists as a part of the learning constellation, though not impacting directly on the learning process in itself.

On the other hand, Song (2010) defines cultural context, which can be said to provide an elaborated view on the social perspective on learning, as "the culture, customs and background…" to which language as a social phenomenon, according to Song, is so closely tied, that it "cannot avoid being influenced by all these factors like social role, social status, sex and age, etc." (Song, 2010: 877).

It is this latter definition of context, i.e. cultural context, which is subscribed to in this work and which, as will be discussed in Chapter Four, best complements an understanding of the various levels of the AS of which the language classroom is comprised.

3.4.2 The role of language

In a similar fashion to the way in which the role of context is defined in the previous section, that is, to allow for the interaction taking place within the AS of the language classroom to be elaborated on, the role played by language is examined from three angles in the ensuing sub-sections.

Firstly, the role of language, defined in terms of its *context of use* (Meskill 2005b), will be discussed. This refers to the talk produced within the situational as well as the cultural context.

Secondly, the use of L1 within this constellation will also be more closely examined as it often presents itself in classroom talk which is not directed by the teacher.

Thirdly, the issue of "languaging", which consists of private speech and collaborative dialogue (Swain et al., 2011: 34), will be explored.

3.4.2.1 The nature of talk and its context of use

Meskill's (2005b) examination of the concept of *context of use* revolves around the use of language in a CALL context. In her research, she looks at one specific CALL classroom in which the emphasis is on the way in which the teacher manoeuvres so-called "instructional conversations". Gee (2000), cited in Meskill (2005b), defines such conversations as "overt focusing and scaffolding…[to] focus learners on the most fruitful sorts of patterns in their experience" (Meskill, 2005b: 46). In this manoeuvring process, learners are supported in noticing, for example, language elements which are selected by the teacher as having a specific value to their linguistic development at the specific point within the language programme. Meskill (2005b), therefore, examines the combined impact of this form of language instruction, together with the way in which the computer, as a resource, is incorporated in this process.

While the nature of the talk "around the computer" is directed by the teacher in Meskill's (2005b) evaluation, in the specific CALL context in which the present research takes place, learners operate in a more open cultural context (as defined in Section 3.4.1). This means that the classroom becomes more of an open space in which the teacher assumes a less directive role and the learners engage with the language in ways which are determined by themselves. This specific context approximates what Porter (1986), cited in Hanncock, 1997, suggests learners need in order to promote their communicative competence: "[L]earners must get practice in communicative exchanges in the classroom" which she further indicates occurs "when they are asked to work unsupervised in pairs or groups during a language lesson" (Hanncock, 1997: 217). Learners operating in such contexts of use, therefore, use forms of expressions with which they are already familiar, determine which language elements they need, and even code-switch

(using their L1) when it seems appropriate to do so. While this line of argumentation supports these open spaces in terms of the way communicative language can be supported, another perspective on these open spaces is offered by Hellermann (2008). This author states that such learning arrangements, "where student peers work together independently of the teacher, are seen as an important site for language learning because of its entire interactive process rather than its static design" (Hellermann, 2008: 18). This suggests that these processes, or conditions supporting language use as a more holistic process, and not simply the learning and acquisition of language items in and of themselves, need to be given due consideration if the learning experience as a whole is to be enriched. This, in turn, has implications for the value of the use of L1 during classroom interaction.

3.4.2.2 The use of L1

The role of L1 during interaction in the classroom has been examined from both the cognitivist perspective as well as from the sociocultural perspective. According to Mackey et al. (2012), studies addressing L2 acquisition have approached investigation into how interaction (including the role of L1) contributes to the development of linguistic features from the perspective of the Interaction Hypothesis (see Section 3.3.1 for a discussion on new perspectives on interaction from combined interactionist/sociocultural approaches).

However, as the focus of this research falls within the sociocultural paradigm, the use of L1 is not analysed from a fundamentally linguistic perspective. As pointed out by Dailey-O'Cain and Liebscher (2009), the sociocultural perspective allows for a more balanced view of language development as cognition and human interaction are often juxtaposed in examining the classroom experience. As is common for studies in this research area and as stated by DiCamilla and Antón (2012), "it focuses on the value of L1 as an important and often indispensable semiotic device that mediates the learning process, even when what is being learned is a second language" (DiCamilla & Antón, 2012: 161). This research orientation is also supported by researchers who see the role played by L1 as "[going] far beyond the traditional view of linguistic transfer" (DiCamilla & Antón, 2012: 163). See also DiCamilla & Antón, 2004; Rolin-Ianziti & Varshney, 2008; Scott & De La Fuente, 2008; Thoms et al., 2005.

As expressed above, learners in the L2 classroom, often decide when it is suitable to use their L1. In considering the various uses to which learners put L1, Hancock (1997) labels this mediational role as taking place within *frames*, a denomination he adopts from Goffman (1974) and which he defines as "speakers' definitions of the kind of activities they are engaged in" (Hancock; 1997: 219). These frames, he further divides on a literal level and a non literal level. At the former level, he identifies learners producing language as they would within normal communication and at the latter level, he considers the language used as what might be considered the mere product of a pedagogical task intended for an "invisible" native speaker – a third party whom he calls a *referee*.

In a similar vein, DiCamilla and Antón (2012) develop a taxonomy of language functions which classify the types of uses to which learners working collaboratively put language.

They identify *content*, *language*, *task management* and *interpersonal relations* as constituting what they call the "macrofunctions" among which learners' use of L1 and L2 were distributed.

These forms of categorisation make observable the layers of discourse which can be said to be operating during interaction and provide a possible lens through which interactional moments can be viewed in order to identify their specific value within classroom interaction. In the case of the present research, for example, it allows for a clear allocation of the mediational role of two "semiotic devices" (that is, L1 and L2) within the classroom context as well as their relationship to other contextual factors such as the role adopted by the participants and the role of the computer in the interaction process. This system of categorisation can be used to further clarify the AS of the classroom in which each learner, or subject, with his or her specific identity, interacts with others and with the available resources in different ways.

3.4.3 Learner identity

In Norton and McKinney's (2011) overview of learner identity presented earlier in this chapter, the issue of learner identity is addressed more from the research perspective. From this perspective the "participant" is seen simply in his/her capacity as learner or acting in relation to other peers. This latter implicit (social) dimension is, however, the key aspect embodied in the research objective of this

present study, since it is in looking at and asking learners to consider their interaction with their peers that one is able to get an insight into the roles they play and how this impacts on their learning experience within the specific constellation of the learning environment. This supports the view of language learning from the social theoretical perspective toward which the present research is oriented, that is, as "a phenomenon that emerges from participation in communities of practice in which learners develop their learning out of experience" (Sade, 2011: 44).

In the classroom context, this latter view contrasts with the typical "teacher-fronted" classrooms which Richards (2006) criticises since what remains unaddressed is "the issue of whether more conversational forms of interaction can be generated" (Richards, 2006: 55).

While Richards' critique leads him to explore ways of fostering these forms of conversation in teacher-student interaction, he does allude to the greater potential of the classroom context to offer more opportunities for learners to engage in conversation. It is in this way that the classroom context, from the social perspective and as alluded to above, opens the way for learners to develop their own "voice" as they engage in a more authentic conversation. The roles which they assume during interaction, therefore, are reflected in the nature of their contributions to the successful completion of the task at hand in which a functional perspective of language plays a fundamental role (Larsen-Freeman, 2007:780).

3.4.4 The role of resources

In addition to the roles emerging out of the classroom interaction, one other key area of focus which has particular relevance for this present research is the role played by the resources made available to the learners and which can be said to make up a significant part of the architecture of the learning environment.

In the context of CALL, the specific context with which this research is concerned, Chapelle (2010) defines the resources falling under this denomination as "a variety of technology uses for language learning including CD-ROMs containing interactive multimedia and other language exercises, electronic reference materials such as online dictionaries and grammar checkers, and electronic communication in the target language through email, blogs, and wikis" (Chapelle, 2010: 66). This definition approximates that of Kern and Warschauer's (2000)

understanding of traditional CALL (see Section 2.2) as limited to options for working *at* the computer.

Stockwell and Tanaka-Ellis (2012), however, have more recently supported Meskill's (2005b) attempt at broadening the definition of CALL by elaborating on the role of the environment to include contextual factors. These authors state that "[t]he term "environment" when it comes to CALL is extremely broad, and it includes not only the technological artifacts, but also, among other things, the curriculum, the classroom (or lack thereof), the learners and teachers, and the skills and backgrounds they bring with them" (Stockwell & Tanaka-Ellis, 2012: 71).

They suggest that the variety of constellations in which CALL resources are used can be divided into different categories. Among the categories which these authors suggest CALL environments be divided into, is "face-to-face environments" which they see as a valuable learning environment in which the computer can be used for individual, peer or small group interaction. In defining this environment, their objective is "to show how even an environment that may be perceived as relatively simple at face value can involve a wide range of complexities" (Stockwell &Tanaka-Ellis, 2012: 71).

This strongly alludes to the potential value, argued for in this thesis, of a closer examination of the dynamic system of the CALL classroom, focusing specifically on the 'complex' range of interactions taking place and analysing them from a socially oriented theoretical perspective.

3.5 Conclusion

As indicated in the introduction to this chapter, the culminating goal here is to establish, after considering various approaches in SLA research, the basis on which this research effort adopts a sociocultural perspective.

As argued in this chapter, the key factors under consideration in the research, in attempting to analyse interaction, are the use of language and the way in which the context in which language and other factors within the learning context (for example, the role learners assume) constitute a dynamic system and, consequently, impact on the learning experience.

Table 5 shows that although the various nuances among the social perspectives addressing interaction presented in this chapter are at times subtle, they are distinctive to the extent that they each place specific emphasis on a particular dimension of the general understanding of a social theoretical approach to

language learning which is embodied in the sociocultural theory approach. This core understanding is identified by Larsen-Freeman (2007), who reiterates Wagner's (2004) observation, as follows: "[F]or socially oriented researchers, increasing participation in social life is the main object of description of a social theory of learning" (Wagner, 2004, cited in Larsen-Freeman, 2007: 781).

Table 5 An overview of "alternative" approaches in SLA research and the respective views on the role of language and context

Approach	View on language	View on context
The Sociocultural Approach	A symbolic tool which serves to mediate interaction	The scenario created to facilitate intrapersonal and interpersonal processes which lead to "appropriation" (as supported by the Vygotskian concept of the Zone of Proximinal Developmen (ZPD)
A Complexity Theory Approach	One component, similar to agents or participants, which contributes to and is itself subject to the process of change	"An adaptive system" which generates itself through interaction among multiple participants producing renewed understandings of the learning process
An Identity Approach	One possible mode of expressing identity (e.g. through imagination) created by learners to facilitate a personal sense of community	A site where social factors construct the definition and expression of self within a community of practice
Language Socialisation Approaches	A tool alongside physical arte facts and social agents which creates affordances that mediate learning	The community within which social practices of communication are formed and reformed through multidirectional influences
A Conversation-analytic Approach	A system comprising linguistic resources (e.g. grammar) and skills (e.g. listening) used to establish and advance social interaction	The social arena in which oral exchange takes shape and meaning
A Sociocognitive Approach	An element among other ecosocial resources (e.g. computers, other learners) which facilitates cognition and social action	An open network not restricted to any one specific physical location

Additionally, while all the alternative approaches, as indicated in the overview of the research focus of each approach in Section 3.2.1, offer the potential of examining both the use of language and the context, it is precisely the "genetic" approach purported by Vygotsky (1978) to examining human development (upon which sociocultural theory is grounded) that makes sociocultural theory an

appropriate theoretical framework for this present research. (See Chapter Four for a discussion on the genetic approach within the construct of AT).

It is based on this genetic approach, for example, that the issue of mediation, particularly within an AS, features prominently in research based on sociocultural theory as it suggests that mediation functions in different ways and exists on different levels.

It is, therefore, fitting that sociocultural theory, with its potential for providing a framework for analysing mediation and levels of interaction, forms the theoretical backdrop of this research.

In this vein, there are three specific areas of focus which sociocultural theory supports which makes it a particularly appropriate framework within which to consider the main objective of this research to discover and characterise the features of interaction (between and among agents and artefacts) and their impact on the learning experience within a one-CALL classroom:

1. The mediational roles of language, agents and physical artefacts
2. The different levels making up the learning context (the AS) of the one-CALL classroom, and
3. The nature of the interaction within the AS as explained by AT.

These constitute some of the major phenomena which as Block (2003) puts it: "…come together under the rubric of what has come to be known as Activity Theory" (Block, 2003: 101).

In the following chapter, therefore, AT – which can be understood as an accepted framework within the paradigm of sociocultural theory – will be defined and examined as applied to research in general, and to this specific research endeavour in terms of its potential for helping to explain the interaction taking place in the selected AS.

4 Activity Theory as a framework for analysing interaction

A presentation of the components of Activity Theory and the Activity System model based on Engeström (1999) as a framework within which the learning experience can be analysed to explicate the nature of the interaction taking place

4.1 Introduction

AT can be considered to be among the emergent socioculturally-based theoretical frameworks in use in the context of research into interaction in the L2 classroom. It has gained acceptance both as an extension to Vygotskian theory of mind and as a theory which brings together the dichotomy between cognitive development as an almost exclusively intrapersonal process and social interaction as having a significant impact on cognition (Lantolf &Thorne, 2006). These two perspectives, from which the value of AT can be viewed, as it relates to interaction, will be the focus of the present chapter. The following sections will, therefore, examine the key features and concepts of AT and the AS model, particularly as applied within the scope of the present research endeavour. It will also demonstrate the way in which the "social" side of the cognitive-social debate, as elaborated on in the previous chapter, has been addressed from an AT perspective.

4.2 The components of Activity Theory

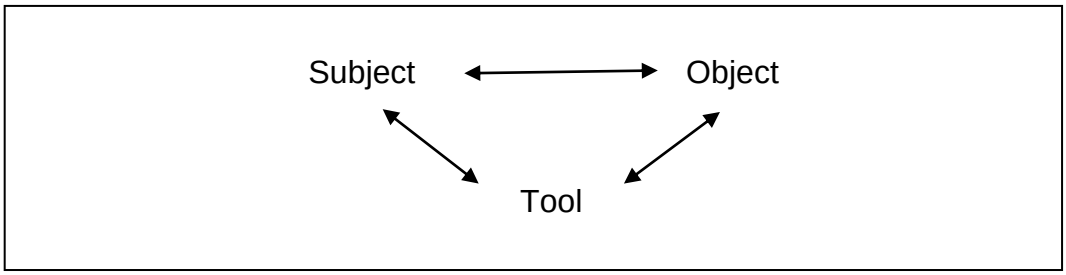
AT offers a framework within which the processes occurring within a particular context can be analysed to identify the ways in which they impact on and are impacted on by participants interacting with each other. Lim and Hang (2003) locate AT within a sociocultural paradigm by identifying mediation as a key concept in understanding the processes which take place during interaction:

"In essence, Activity Theory proposes that activities consist of processes both at the individual and social level, including the mediational tools and artefacts that link the processes together" (Lim & Hang, 2003: 51).

Here the emphasis is clearly not only on human interaction, but on how each component in the context functions in concert for a specific outcome to be achieved. The subjects or actors, the tools they work with and the goal worked toward, for example, can be said to be dynamically linked together as there is reciprocal and multi-directional engagement among these elements. AT, therefore, offers an expansion of this triadic interaction concept, initially purported by Vygotsky as more uni-directional (see Figure 4.1), by providing the opportunity to

define the various components which influence the processes occurring in this constellation and their observable impact.

Figure 4.1 The Vygotskian triadic representation of interpersonal tool-mediated interaction



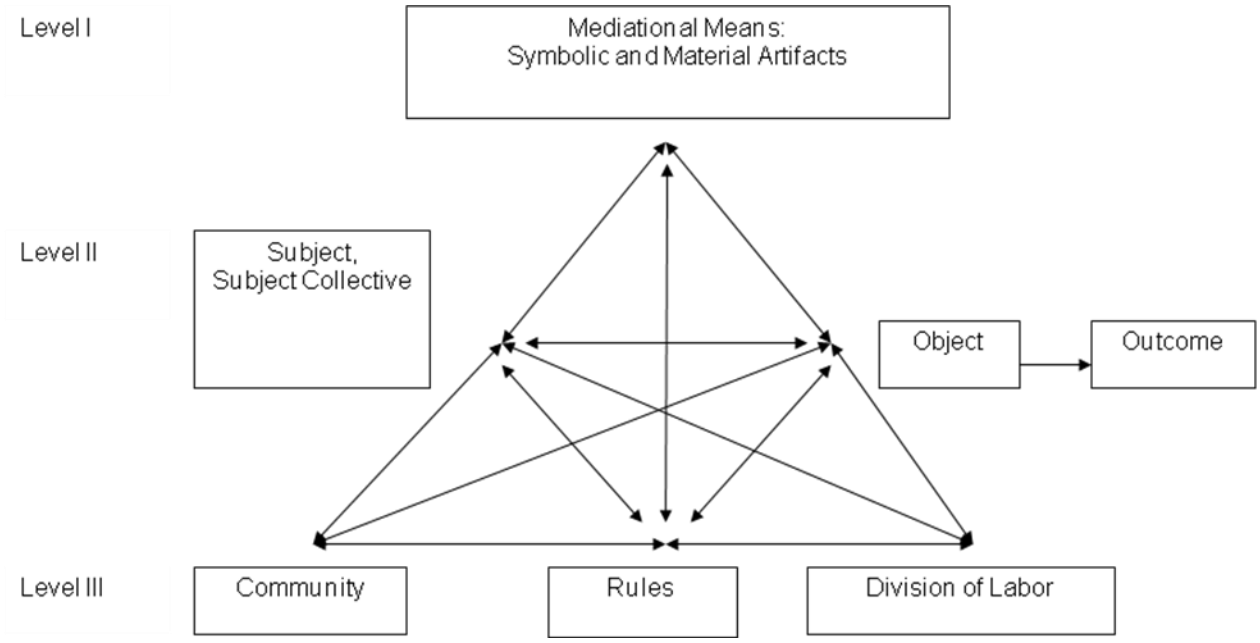
Additionally, it allows for a closer examination of the activity itself from both an outsider (observer) perspective as well as from an insider (participant) perspective. This latter plays a very significant role in this present research, as the perspectives of the participants form the core for understanding the more intrinsic side of the process. This supports the value identified by Lantolf and Thorne (2006) of the multivocal perspective:

"... Activity Theory is concerned with multivocality. Though an analyst produces systemic representations 'from above' as it were, s/he must also attempt to render the participant relative perspective of the situation. This effort produces a multivocalic representation of the activity under investigation" (Lantolf & Thorne, 2006: 211).

Such a perspective gives participants the chance to articulate the way in which they themselves experience the interaction points within what has been called the AS in which they are operating.

Engeström (1999) identifies three levels within this system which are inextricably interlinked and which classify all the elements of a context which impact reciprocally on each other (see Figure 4.2). In Figure 4.2, these three levels and their components are highlighted: the tools or what can be referred to as the mediational means by which the activity is realised, the subjects and the object they work on or create, which moves them toward an outcome and, finally, those context-related or social factors which consciously or unconsciously influence the nature and form of the interaction.

Figure 4.2 Engeström's (1999) AS model illustrating the relationship between its various components (Müller-Hartmann & Schocker-v. Ditfurth, 2008: 21)



It is, therefore, an understanding of these various components within a given constellation and their inter-relatedness which contribute to illuminating the processes taking place and which will, consequently, be addressed in the following sub-sections.

4.2.1 The mediational means

Mediation, in the context of sociocultural theory, has been described by Lantolf and Thorne (2006) as "the process through which humans deploy culturally constructed artefacts, concepts, and activities to regulate (i.e. gain voluntary control over and transform) the material world or their own and each other's social and mental activity" (Lantolf & Thorne: 2006: 79). The mediational means which learners make use of in the classroom should, therefore, match the learning objectives so that these latter can be fully achieved. These mediational means, traditionally comprising what might be considered standard classroom teaching material like books, the blackboard and the overhead projector, for example, have, in recent decades, expanded to include new digital technologies. In the case of these latter, and as alluded to by Gánem Gutiérrez (2006), care needs to be taken

in situating these artefacts within the process of interaction to avoid the focus being on the artefact itself as an isolated, self-contained and illusively magical tool. This suggests that the mediational function of the computer in the language classroom, for example, can only be meaningfully understood within the context of the activity which it facilitates and as it is used and viewed by learners.

It is in this vein that Gánem Gutiérrez (2006) cites Donato's (1988) recommendation that some attention be given to "how the learner relates himself to the learning task and how this relationship is based on the learner's self-constructed goals" (Donato 1988: 5, cited in Gánem Gutiérrez 2006: 233) in order to arrive at a better understanding of the learning process itself.

It should also be noted that, in addition to considering the mediational function of material artefacts, such as the computer, and the way in which the learner relates to these, the role of symbolic artefacts are equally significant. Among such artefacts, language can be considered the most crucial as it constitutes the very means by which students, in their interaction, express and make public their thoughts and (shared) understandings.

Swain (2006) denominates this mediational means of language as "languaging". This she specifically defines as "…the process of making meaning and shaping knowledge and experience through language… This means that the languaging (the dialogue or private speech) about language that learners engage in takes on new meaning… In languaging, we see learning taking place" (Swain, 2006: 98).

This relates back to the previous discussion in Chapter Three which sought to establish that even within the cognitive-social debate, in which the former perspective zeroes in on language development as mainly an intrapersonal activity, the importance of examining the use of language within its social context provides a richer research balance in terms of seeing a broader learning impact coming out of the interaction (the dialogue).

Viewed within its social context, language use can be seen both in terms of its languaging function as defined by Swain (2006) as well as an indicator of other socially related factors which influence the learning experience.

If the classroom is also to be considered a social context, as it provides a venue for interaction, the implication here is that language serves as a means by which learners' identity can be fostered. Liebscher and Dailey-O'Cain (2005) further suggest that such "participant related" language use, as evidenced by the choice

learners make to use L1, for example, serves to consolidate the classroom environment as a community of practice which has positive implications for supporting learners in the development of L2.

It should, therefore, be noted that it is based on the recommendations mentioned above of considering how learners relate with material artefacts within the learning activity and of the importance of examining the context as a dynamic system, rather than its mere constituent parts, that this research project focuses on the integrated perspective of the natural interaction of learners (the subjects) working on a specifically defined goal (the object), in order to meet the learning objectives (outcome).

4.2.2 The subject(s), the object and the outcome

The subjects within a classroom AS refer to the students and the teacher, that is, the human actors in the setting. According to Lantolf and Thorne (2006), the very term “subject” is one which has not been well elaborated and as a result, one which remains ambiguous. While, according to these authors, the term is consequently somewhat of a misnomer, it is in their role as agents interacting together that the term “subject” can best be understood. In other words, the subjects are the actors in the learning situation who play an active role in their own learning experience as well as in the learning experience of those with whom they interact. These actors are either assigned and/or adopt different roles as they interact with each other and with the material as well as the symbolic artefacts at their disposal.

As already hinted at, it is during and through this interaction that learning can be seen to be taking place as subjects influence each others’ understandings and define shared understandings. It is also during this process that roles are defined and redefined, giving way to an ongoing change in the way these components impact on each other – creating the multi-directional effect referred to above. Nardi (1996) sums this up concisely in stating that “[a] context cannot be reduced to an enumeration of people and artifacts: rather the specific transformative relationship between people and artifacts, ... is at the heart of any definition of context or activity” (Nardi, 1996: 76). It is this appreciation of the learning experience which AT highlights and which Block (2003) refers to as the “participation” metaphor.

Drawing on a condensed list of tenets based on Lantolf and Pavlenko's (2001) concept of Second Language Activity, Block (2003) exemplifies the application of this metaphor in his research. In an interview-based study, Block (2003) interprets how learners perceive themselves in their learning experience. These I reformulate as follows to emphasise the way in which learners, as subjects, engage actively in their learning environment:

1. Learners actively interpret and shape their understandings of new learning experiences based on their historically and socially defined past experiences.
2. Learning is a social event in which learners actively engage with each other and artefacts to mediate their learning.
3. Learners use both positive and negative learning experiences to shape their development.
4. Learners develop agency by interacting with each other.
5. Learners form their own identities within the continuously evolving process of learning.

(Based on Block, 2003: 109-110).

Block (2003) refers back to a previous study in which participants were able to describe their language experience as mediated by themselves and other subjects through appraisals, critique, readily identifying problems, evaluating the behaviour of peers, describing successes, failures and general personal development. Block (2003) was therefore able to draw conclusions about the general impact which this experience had on their language development. This author suggests that, in this way, Lantolf and Pavlenko's (2001) concept of Second Language Activity offers a way of expanding understandings of the process of language development, particularly from the perspective of the learner as subject.

This implies that in order to understand this process, the multiple relationships within the process, beginning with the subject in relation to the object of activity, need to be explored.

Kuutti (1996) situates the object of an activity in a reciprocal relationship with the subject. In this relationship, the subject, based on a specific motive, directs his/her energies toward an object. This author defines the nature of an object as follows: "An object can be a material thing, but it can also be less tangible (such as a plan)

or totally intangible (such as a common idea) as long as it can be shared for manipulation and shared by the participants of the activity" (Kuutti, 1996: 27).

It is this transformative process, or the process by which the outcome can be said to be achieved that researchers place a great deal of focus on. In language learning, the competent speaker would be one possible outcome, if the objective were communicative in nature.

While this outcome is the "end" result of the activity, it is not solely influenced by the process of mediated interaction between subject and object. It is also impacted on at a socially and historically bounded level.

4.2.3 Community, rules and the division of labour

At the centre of the social and historical spectrum of influences which impact on the activity is the community. The community includes the immediate group of participants in the activity as well as those who play some extended or supportive role related to the activity. The parameters for defining the community depend on how broadly or narrowly the AS is conceived. If the classroom is selected as the unit of analysis, the community can either be limited to only those found within this bounded system or it can be extended to include other participants who may not be members of the class, but may be participating in the activity. These may include tutors, project partners or online peers, for example. It must be noted, however, that based on the nature of the activity, this classroom community could extend as far as the wider school community or even the society, once a relationship can be established between these groups, the participants and the activity.

In his expansion of AT, Engeström (1993) considered both the so-called horizontal and vertical relationships and interactions within the system. It is for this reason that the division of labor as well as the rules of the community feature at the base of the Engeström's AT diagram (see Figure 4.2 in Section 4.2).

The division of labor can be considered to be the structure of the community in terms of how the participants view and interact with each other on that basis. It is in this sense that the roles played by each participant take on special significance within classroom interaction.

Once the community and its structure have been defined, the rules (stated and unstated) which govern the behaviour and expectations for carrying out the activity

can be identified. These rules are either agreed on or mandated at the start of the activity, or may already be established if the community is a fixed unit.

It should be noted that these features constitute a conceptualisation of the structures which help shape the outcome of the activity and represent complex and changing relationships. Swain et al. (2011), therefore, state: “The process of [the] activity, the rules and the division of labor may both change. Part of the messiness and power of Activity Theory comes from the notion that none of these categories or their relationships is static” (Swain et al., 2011: 101).

4.3 Activity, action and operations at the classroom level

What becomes obvious at this point, and as hinted at by Lantolf and Pavlenko’s (2001) concept of Second Language Activity discussed in the previous section, is the fact that it is at the classroom level (depicted at Level Two of the AS model in Figure 4.2), that the central process, or activity, takes place.

Activity, in this sense, and as Müller-Hartmann and Schocker-v. Ditfurth (2008) caution, does not simply refer to a task designed to allow learners to use language to achieve an objective.

These authors consider activity a more all-encompassing concept. This follows the accepted view of activity, within the context of AT, as taking place at three different hierarchical levels representing human behaviour, a structural understanding originally developed by Leont’ev (1981), cited in Lantolf and Thorne, 2006: 217.

Lantolf and Thorne (2006), basing their understanding of this hierarchy on Bødker’s (1997) synthesis, offer a comprehensive illustrated overview (see Table 6).

Table 6 Hierarchy of activity (Lantolf & Thorne, 2006: 217)

Everyday description	AT unit of analysis	Oriented toward	Carried out by	Time frame
Why something takes place	Activity	Motive, transformation of object	Community and/or society	Recurrent, cyclic, iterative
What is being done	Action	Goal	Individual or group	Linear, finite
The actual doing	Operation	Condition(s)	Individual	Present moment, process ontology

In this illustration, three basic questions are formulated to represent the distinct perspectives from which human activity can be analysed.

At the first level of the hierarchy, the focus is on the activity as a process directed at a specific object. Engestöm (1999) defines the object as the link that brings together individual actions to form the collective activity. In other words, the object can be considered the centrepiece in the process in which learners engage as they continuously work as a community to achieve a final outcome. It is also important to note that at this level, it is the motives of the subjects, whether individual or collective, which drive as well as define the activity.

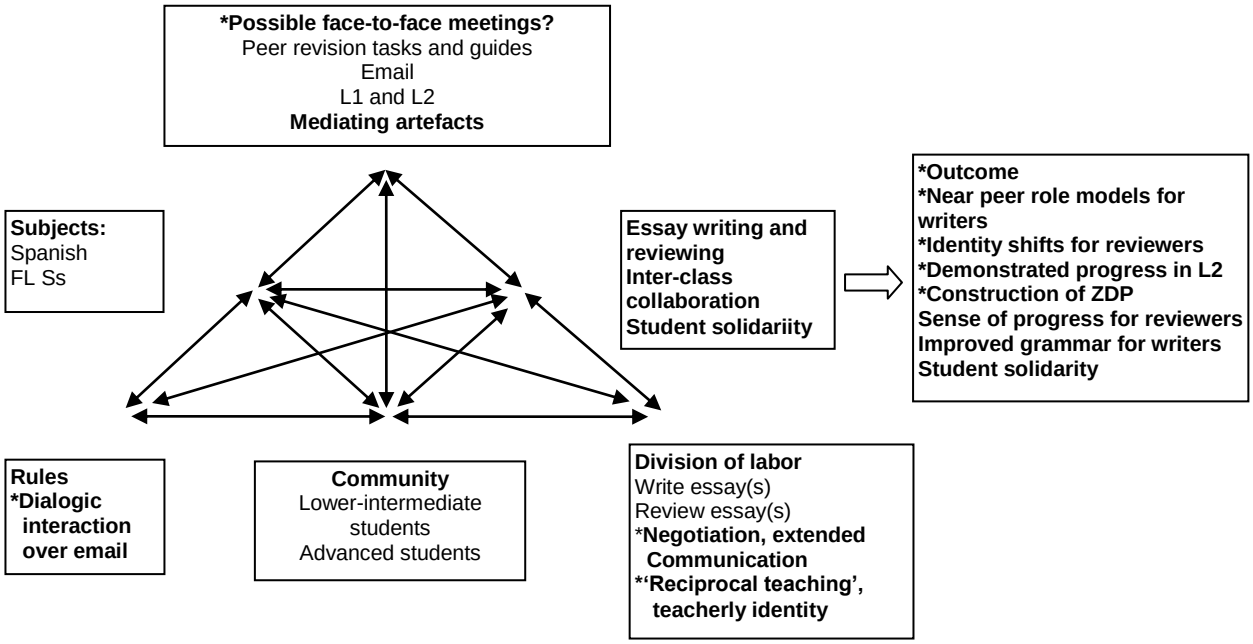
At the second level of the hierarchy, the perspective narrows down to the action. Actions are the concrete enactment of a goal. This means that in the realisation of this goal, an actual product is systematically created by the subject(s).

The final level of the hierarchy refers to the means by which the actions are actually carried out and the way in which conditions impact on the nature of this process.

Within the context of SLA, AT, therefore, offers different levels of perspectives from which the AS can be analysed.

Lantolf and Thorne (2006), illustrate the features of an AS representing the results of a case study research project on the impact of peer-review on learning development (see Figure 4.3). The illustration shows the original features of the AS as well as the proposed future changes (*) in the system which can improve its functioning.

Figure 4.3 The current peer review system and future innovations (Lantolf & Thorne, 2006: 259)



Lantolf and Thorne (2006) reiterate that the goal of applying AT to the classroom system is to provide a framework for defining and analysing the activity taking place. These authors see its major benefit as follows: "Within language education particularly, activity-theory goals of instruction and desired outcomes of classroom activity are forced beyond a focus on what students know; they extend to the social roles made possible and the identities participants can construct over time" (Lantolf & Thorne, 2006: 260).

4.4 Conclusion

As has been seen in this chapter, AT, as a socioculturally oriented approach provides an appropriate framework against which to explore classroom activity. The fact that it supports a multiple perspective examination of the activity and allows one to centre in on the complex levels and directions of interaction makes it a particularly useful framework for the present research.

Swain et al. (2011) affirm the value of using AT to exploit a dynamic system by stating that "activity theory…can provide a way of understanding complex, dynamic situations like a classroom or classroom conversations. It can make

visible the relationship between the individual and the collective, the private and the social planes" (Swain et al., 2011: 98).

It is to this end, that following a clarification of the research process, the ensuing chapters present and discuss the way in which this sociocultural approach can be adopted to examine perspectives on interaction in selected one-CALL classroom contexts.

5 Establishing the research agenda

A presentation of the research agenda including the research methodology, the research approach, the research questions and objectives, the methods of data collection and analysis as well as the approach to presenting the findings. An overview of the concept guiding the research together with a justification for and description of the selected contexts in which the research was carried out is also provided.

5.1 Introduction

The research undertaken and reported on in this work is the result of a search for deeper understandings of the experience of pupils in a classroom setting in which the computer is used as a complementary means to mediate and, consequently, improve the learning experience in some way (Hubbard, 2009).

This dual endeavour (of searching for understandings as well as identifying the specific ways in which learning conditions can be improved in what has been defined as a one-CALL context) lends itself to a qualitative orientation to the research in which, according to Croker (2009) "[the] research focus is on the participants – how participants experience and interact with a phenomenon at a given point in time and in a particular context, and the multiple meanings it has for them" (Croker, 2009: 7). This author goes on to add that for researchers operating in this paradigm "...these settings are complex, dynamic and multifaceted" and that "qualitative researchers focus on understanding the process of what's going on in a setting" (Croker, 2009: 7-8).

Since this is precisely the orientation of this present research, this methodological approach was deemed suitable.

Additionally, and in an attempt to ensure that these processes were examined from what can be considered to be a valid perspective, a predominantly "emic", or insider perspective, was selected, which according to Croker (2009) can refer to "using the participants' own terms and concepts to describe their worlds when analyzing data and presenting findings" (Croker, 2009: 8), as was the case in this research.

In presenting a range of qualitative approaches, Bogdan and Biklen (1992) make reference to what has been denominated "symbolic interaction" which in effect highlights the value of this emic perspective on experiences. They outline the key facets of this approach by stating that "[o]bjects, people, situations, and events do not possess their own meaning: rather meaning is conferred on them" (Bogdan & Biklen, 1992: 36). They add that "[t]he meaning people give to their experience

and their process of interpretation are essential and constitutive, not accidental or secondary to what the experience is" (Bogdan & Biklen, 1992: 36). It is based on this interpretation of the value of the emic perspective that I chose to lay greater emphasis on the views of those directly involved in the "dynamic" processes occurring within the one-CALL classroom, particularly with regards to the various levels of interaction as seen from the perspective of the activity hierarchy as presented in Section 4.3.

As may be the tendency in research projects of this nature (see for example Gumock et al's (2005) research design for analysing oral interaction around computers), what this research does not attempt to do, however, is to analyse interaction using a conversation analysis approach. While in Section 3.2.1, conversation analysis as both an approach and a method applied in understanding SLA was given its merit, it should be noted that this research endeavour considered the use of language only to the extent that it was indicative of the nature of the interaction as a more holistic process.

In other words, while this may be considered a limitation by some and naturally a broader research periphery can provide even further results, it should be appreciated that the specific focus of this research was on arriving at an understanding of the interaction which occurs within what I refer to as the AC of a one- CALL classroom AS with regard to the material and symbolic mediational features of the computer.

In order to see this interaction as a holistic process, and to respond to the research questions, observation of the interaction in the one-CALL classes investigated (the complementary etic view) involved defining and classifying the 'actions' carried out by the pupils as represented by language and/or gestures. This facilitated a holistic view of the interaction in the sense that actions were not restricted to speech acts, as some rich moments of interaction can also be 'speechless'.

This complementary view of the interaction was therefore selected in order to ensure that the fullness of the moments observed could be captured and that this observation could be viewed from two semiotic angles: observing the broader imagistic sign (gestures) and the verbal expression (language) wherever they could be identified as providing cues for interpreting the interaction. This complementary function of gestures and language is articulated by McCafferty and

Ahmed (2000) who, drawing heavily on research by McNeill (1985, 1987 and 1992), differentiate between gestures and language in terms of their semiotic functions and as indicative of the outward expression of thought as inner speech. According to these authors, "[a]s gestures tend to represent the 'whole' of an idea they are different from language which is of a hierarchical nature, one structure building on the next in order to make meaning" (McCafferty & Ahmed, 2000: 204). While this research does not attempt to go as far as analysing the interrelatedness of gesture, language and thought, from a Vygotskian perspective in general and a sociocultural perspective in particular, it does use the basic premise of gesture and language as complementing each other in defining the nature of interaction as its guiding principle.

It is therefore, as alluded to above, on the basis of this research orientation (investigating interaction from an emic perspective and triangulating this perspective with an etic, holistic observation of moments of interaction) that interaction is defined and conditions for supporting learning in this CALL constellation are identified.

Consequently, the aim of this chapter is to establish the research agenda in three phases. This is done by firstly detailing the research design as the vehicle via which the research process progresses, that is, how the case studies, guided by the research questions, evolve into a coherent project. Within the research design, the methods of data collection and analysis as well as the presentation and discussion of the findings are also elaborated upon.

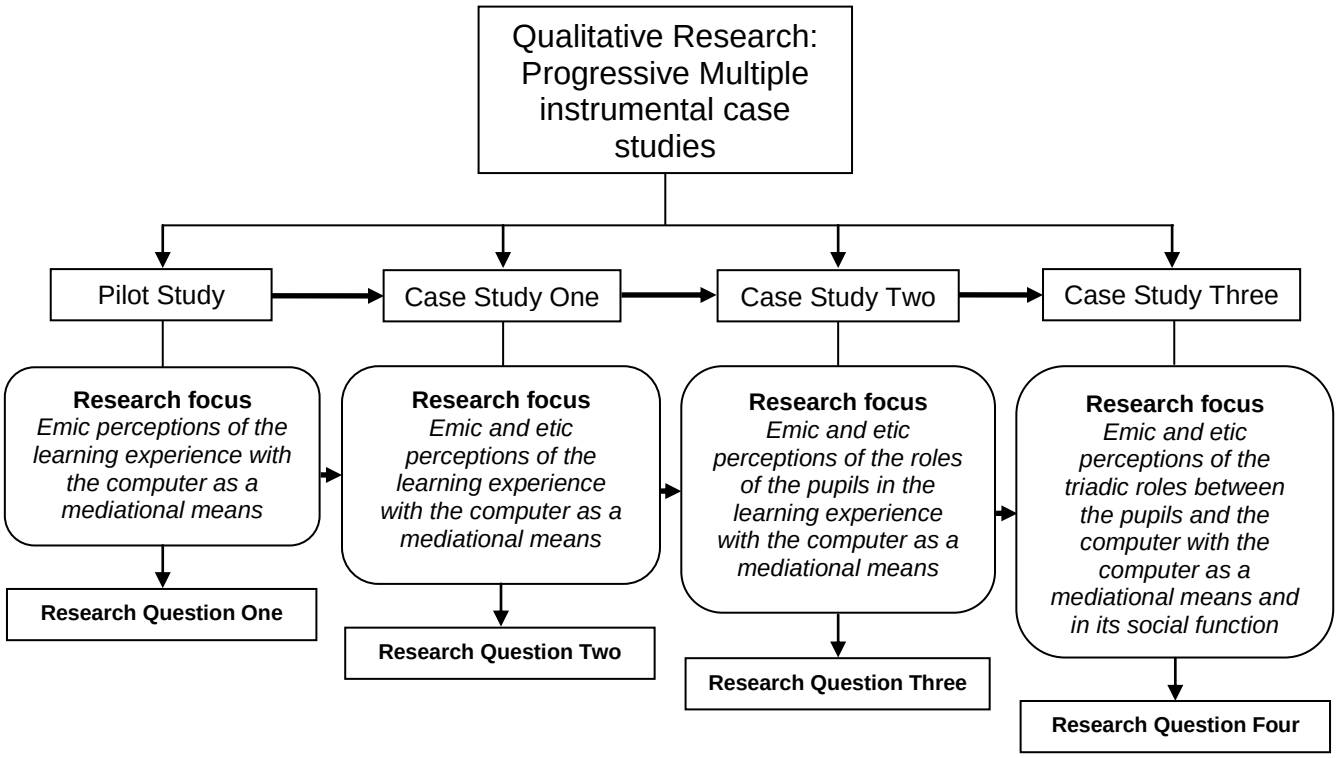
Secondly, the starting point of the research concept will be revisited in order to present the background for the selection of the specific contexts in which the research was conducted.

Finally, the chapter closes by giving an insight into how the research process was initiated in these selected contexts.

5.2 The research design

As stated above, this research design begins the process of establishing the research agenda. In this framework, this section provides an outline of the research methodology and the research approach before further elaborating on the research questions posed and the objectives set in order to be able to respond to these questions. The following overview in Figure 5.1, therefore, offers an initial visual roadmap for the ensuing presentation of the research design.

Figure 5.1 Overview of the research process as a progression of the research focus and in relation to the research questions



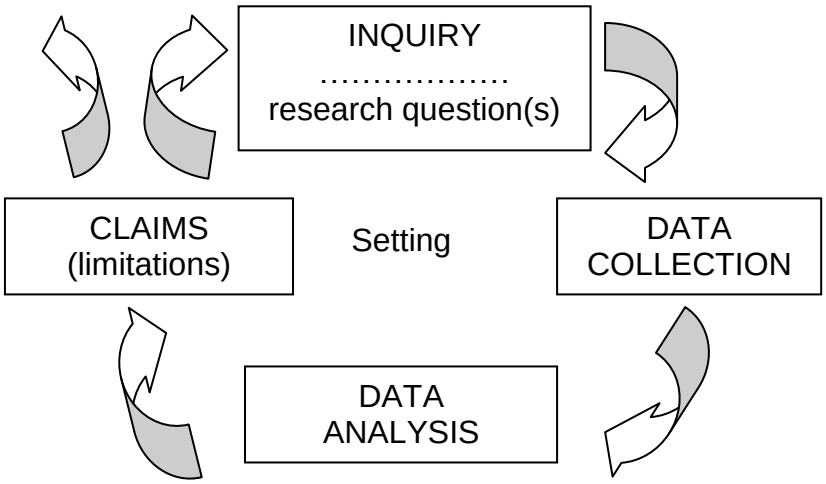
5.2.1 The research methodology and the research approach

As indicated in the introduction to this chapter, the methodology applied in this work is rooted in the qualitative paradigm. Within this paradigm, as stated by Croker (2009), "when little is known about a phenomenon, or existing research is limited, qualitative research is a very useful research methodology because it is *exploratory* - its purpose is to discover new ideas and insights, or even generate new theories...That is, qualitative research mostly focuses on understanding the particular and the distinctive, and does not necessarily seek or claim to generalize findings to other contexts" (Croker, 2009: 9 – italics in original).

Such a process of discovery has been identified by proponents of qualitative research as a messy process (Denzin & Lincoln, 2005; Freeman, 2009; Merriam, 2002). This is not to suggest that there is no clear line of orientation. The implication is simply that the nature of the investigation is not linear, but one that is cyclical, in that "the research often follows an inductive path that begins with few perceived notions, followed by a gradual fine-tuning and narrowing of focus" (Mackay & Gass 2005: 163).

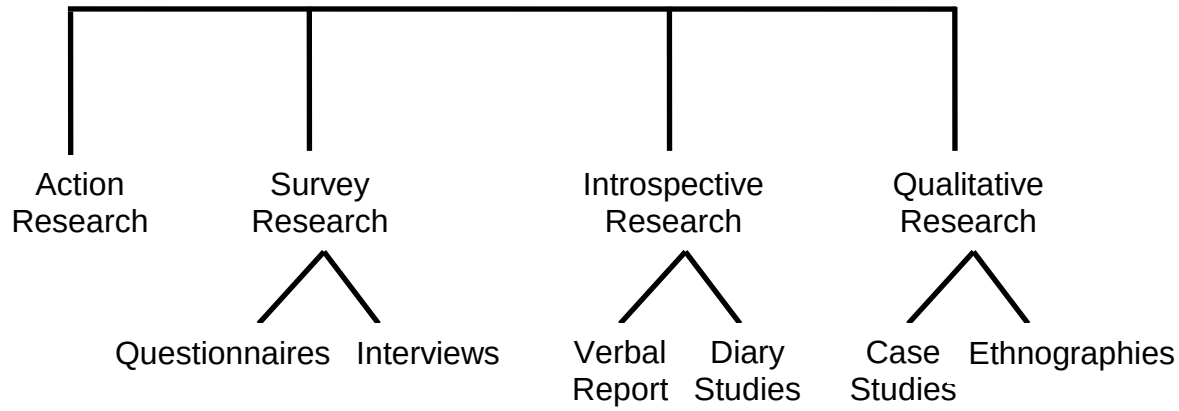
Freeman (2009) represents this qualitative research process as involving a cycle of stages all contributing to the refinement and progression of the research: “In this way, the cycle can start again, like the same melody played another time, but in a different way” (Freeman, 2009: 29) – see Figure 5.2.

Figure 5.2 A representation of the qualitative research cycle (Freeman, 2009: 29)



This methodology relies on a research approach which allows for the exploration of the phenomenon under investigation. Typically, case studies and ethnographies are identified as the two most common research approaches and, consequently, research methods in the qualitative research paradigm (see Figure 5.3).

Figure 5.3 Continuum of research methods (Mackey & Gass, 2005: 16)



Citing Yin (2003), Mckay (2006) refers to one prime reason for adopting a case study approach, for example, being "when … contextual features are highly relevant to the research question" (McKay, 2006: 17). Additionally, this latter author suggests that if multiple variables and, consequently, multiple sources of evidence might also contribute to answering the research question, a case study would be a suitable approach. This view is also supported by Mackay and Gass (2005) as well as by Mardis et al. (2014).

In applying this approach specifically to research on interaction, Mackey (2002) also claimed that "…examining interaction in a range of different contexts is important for researchers to expand their knowledge about the roles of the different variables that influence interactional processes" (Mackey, 2002: 382).

As this research was driven by a desire to look into the 'contextual features' impacting on interaction in a one-CALL classroom in more than one context, the case study approach was therefore adopted. It should be noted, however, as will be discussed below, that while the research looks at a number of contexts, as the objective was primarily to arrive at a better understanding of the interaction taking place, as well as to understand the specific role of the computer (as a phenomenon) in these contexts, this approach cannot be defined singularly in Stake's (1995) understanding of collective or multiple case studies in its strictest sense. As will be seen, the approach is rather reminiscent of the progression of multiple instrumental case studies.

The Case Study approach:

Defined by Merriam (1998) as a specified 'bounded system', a case can be limited to one person or context, for example, one teacher or one student or one classroom or school.

A case study is, thus, ideally suited to allow for the detailed description of one such 'system'.

As Stake (1995) states, it is also up to the researcher to carefully and clearly define the boundaries of this system as an examination of all the elements relevant to understanding this context, or phenomenon to be studied, will be expected.

In providing a categorisation of case studies, Stake (1995) refers to three types of cases: intrinsic, instrumental and collective or multiple case studies.

The first type of case study, the **intrinsic case study**, is a detailed study of a single case in which great attention is given to gathering a rich description of the case, with the objective being to provide a thorough understanding of the case itself as the phenomenon under examination.

Stake (1995) also refers to the **instrumental case study** in which description, though still an important part of the process of the investigation, is no longer the main focus. In the instrumental case study, evaluating the data to arrive at an understanding of the phenomenon, rather than the case per se, is the central objective.

Finally, Stake (1995) defines the **multiple case study** as comparative in nature since the unit of analysis might be compared in two different contexts, for example, to clarify or confirm interpretations of the issue or problem under study. Another variation would be to study multiple units within one particular context.

Yin (2003), on the other hand, categorises case studies into three different types: exploratory, descriptive and explanatory.

The **exploratory case study** can be considered a ground-breaking type of study in which the objective is to identify a new area of research which can set the stage for further investigation.

Yin's (2003) second category, refers to the **descriptive case study** which can be seen as identical to Stake's view of the intrinsic case study which attempts to understand a phenomenon or context by providing thick descriptions.

The third category or case study application identified by Yin (2003) is the **explanatory case study** which accounts for causal relationships. In this application, the key issue is to determine the reasons behind the impact or effects of a certain phenomenon.

While these categories do offer a clear and tangible conceptualisation of what constitutes a case study based on a focus on the function of the case study (Stake) or its purpose (Yin), essential to case study research is an appreciation of the particular value which it gives to classroom research.

In the case of this research, this advantage can be defined as the opportunity which this approach affords to delve into the experience of the learners. As articulated by Johnson (1993), cited in Mackay and Gass (2005), "…very little is learned about individual language learners, teachers or classes" (Mackay & Gass, 2005: 172). Johnson (1993), cited in Mackay and Gass (2005), further

acknowledges that "[c]ase studies stand in contrast to… [correlational, survey and experimental research] approaches by providing insights into the complexities of particular cases in their particular contexts" (Mackay & Gass, 2005: 172).

It is also the fact that this research follows a progression in which each case study offers further insight into the nature of the interaction in the integrated CALL classroom that the specific denomination 'progressive multiple instrumental case studies' has been given to the precise approach selected. This falls in line with the research goal which rather than "simply understanding the issue or research *setting* for its own sake" (Heigham & Croker, 2009: 314 – italics in original), attempts to provide understandings of the issue of the nature of effective learning conditions in CALL with regard to social interaction.

5.2.2 The research questions and objectives

As alluded to above, one of the key features of research stemming from a qualitative paradigm is the way in which the research evolves and becomes more refined throughout the process of data collection and analysis. As already outlined in the introduction to this work, there are three main questions which guided the research. These questions also went through a process of refinement.

In this sub-section, I outline this trajectory of refinement and the specific objectives set at each phase of the research.

As a starting point to investigating the so-called flipped version of the LTE classroom, that is, by making a deliberate choice to limit the number of computers within the actual classroom setting to support effective use in this context, I formulated an initial question: What is the experience of pupils as they work together in a one-computer classroom? As this question needed greater focus, I then considered the mediational means with which pupils would be working, the likely aspects of contact they would have as they worked together and whether these two aspects of focus would provide hints as to the extent to which the conditions created were bringing about any appreciative effect.

I, therefore, reformulated the question to combine these aspects in a way which would offer responses to the core of the experience, that is, the 'location' where one could begin to define effectiveness.

Though this question still had the potential to be further fine-tuned, it was sufficiently focused to provide information which might at least lead to further

questions. This first stage of the research process, according to Freeman (2009) is the beginning of the cyclical process referred to previously which “can often lead to more questions” (Freeman, 2009: 29). Freeman goes on to add, that the very environment in which the research is set further impacts on all the stages in the research process, including the research questions: “The research question organises some of the information into data. It provides a lens through which you can see particular information in the setting as ‘data’...But the setting is not passive ... it carries lots of information and meaning independent of the research question(s) you are asking of it. The setting can reveal information that can recast your research question(s) and/or design...” (Freeman, 2009: 31).

In the Pilot Study, therefore, the specific research question (Research Question One) asked was:

In what ways do pupils perceive the use of the computer to support them in the foreign language classroom?

The specific objectives were to:

a) determine how pupils define their learning experience in terms of
   i. what they are learning;
   ii. how they feel in the selected learning arrangement;
   iii. how they perceive the use of the computer as a complementary mediational means (i.e. specifically in the one-computer classroom);
b) formulate descriptors for the functionalities of the computer as a mediational means based on the perceptions of the pupils; and
c) establish the extent to which pupils view the computer as being integrated into the classroom.

By addressing these questions, a base could then be established for further case studies which would look more closely at the classroom interaction as it relates to student perspectives. This base would consist of initial descriptors which will have emerged in this Pilot Study. This would, therefore, help to establish the role of the computer as a mediational means which could be further corroborated and refined by examining specific moments of interaction.

It is on this basis that Case Study One would not only consider the perception of the pupils (the emic view) in attempting to understand the core of the classroom experience, but it would also take a complementary look into the actual interaction

taking place (the etic view) in order to then consider the way in which this interaction could be seen to be effective.

One additional aspect of Case Study One which would be explored would be the use of media in general. Based on the fact that an integrated CALL classroom is one in which the computer is seen as one among a variety of other mediational means, an examination of pupils' perceptions as well as an observation of their interaction with media in general and the computer in particular was seen to be of value in terms of presenting the reality of the particular CALL classroom in its constellation at the time of the study.

In Case Study One, therefore, the question asked (Research Question Two) was:

In what ways can the interaction in an integrated CALL classroom be defined and can these definitions be said to constitute effective conditions for learning in the foreign language classroom?

The specific objectives were to:

d) identify previously defined descriptors (based on b) above) within pupils' articulation of their perceptions of the learning experience with media in general and with the computer in particular;
e) identify previously defined descriptors based on an observation of the interaction in which pupils engage as a means of corroborating the definition of the learning experience coming out of d) above; and
f) align these descriptors with definitions of effective learning conditions in CALL proposed by Hubbard (2009).

While these descriptors would serve as a useful starting point for determining the extent to which the interaction could be said to be effective, another factor which would be more fully considered in the ensuing study, Case Study Two, which would also be potentially relevant to addressing the question of effectiveness in the one-CALL classroom, would be the nature of the roles of the pupils themselves. Additionally, as the pupils would also be observed as they organised the task off-computer (another location within the one-CALL class) it was deemed relevant to analyse this interaction as well.

This area of focus was related to the way in which the CALL task served as a catalyst for other interaction points in the one-CALL classroom. In other words, the CALL task included a variety of interaction points, not only at and around the computer, but off-computer interaction was also an integral part of the one-CALL

classroom complex in which the notion of the AC plays an important role. At this location, a number of diadic and triadic interactions can be identified in which the computer features as one element among others within this system.

This meant that the data would be relevant in terms of providing possible evidence of "normalisation" as defined by Bax (2003, 2011a) and Chambers and Bax (2006), in that it would reveal how the computer was being resourced by the pupils when necessary, but was not a central (isolated) focus in the classroom experience.

On this basis, I formulated the research question (Research Question Three) as follows:

Which roles do pupils assume in their interaction within the one-computer classroom in both off-computer and on-computer tasks and can these roles be said to be valuable to the learning conditions in the foreign language classroom?

The objectives in this case were to:

g) describe the roles pupils assume in their interaction with each other in off-computer tasks as well as around the computer; and
h) align these roles with definitions of effective learning conditions in CALL proposed by Hubbard (2009).

In looking at the roles assumed by pupils, one final area of focus which could make yet another contribution to getting to the core of the experience of learners in the one-CALL classroom was the specific social function of the computer as perceived by the pupils from a more emic standpoint.

In other words, the specific nature of the interaction as occurring within a triadic constellation would be investigated from a holistic perspective, that is, as interpreted by the pupils themselves with regard to the various ways they see the computer impacting on their learning experience.

As a result, in Case Study Three the question (Research Question Four) was further refined to investigate:

How do pupils perceive their roles and that of the computer in triadic interaction within the one-CALL classroom and from which perspective(s) do they view this interaction as impacting on the learning experience?

The specific objectives were to:

i) describe the roles pupils perceive themselves as well as the computer taking on as they work with each other around the computer; and
j) evaluate the perspective(s) from which pupils view the value of these roles in the learning experience.

Having completed the process of obtaining an emic as well as an etic view of the experience in a number of one-CALL classrooms, in the conclusion the results discussed within each case study chapter would, therefore, be synthesised, which Mackey and Gass (2005) refer to as a meta-analysis, to finally be able to make recommendations for further research and ultimately for improving the language classroom in general and in moving toward the normalisation of CALL.

5.2.3 Data collection methods

In attempting to unravel the complexities of particular contexts, case studies generally combine a variety of sources of data and methods of data collection. In so doing, they make use of various data collection instruments to broaden the data base. Having access to this array of data strengthens the external validity of the research in that there is more opportunity to triangulate the data when arriving at what Yin (2003), cited in McKay (2006), refers to as “analytical generalizations”. These generalizations, unlike those typically made in quantitative research, according to McKay (2006), are generalizations based on “the findings of a study [which] can lend support to a broader theory” (McKay, 2006: 73) – precisely what qualitative research in general, and the case study in particular, seeks to achieve. Supporting theory, in this sense, should not be limited to mean confirming pre-established theories, but refers predominantly to the construction of substantive theory.

According to Adelman (2010), “[t]he content of substantive theory is mainly descriptive, focused on the essence, or substance, of the numerous case instances in a parsimonious relational structure” (Adelman, 2009: 907). This author goes on to add that “[i]n the construction of substantive theory the theorizer seeks to enhance understanding by identifying similarities and differences of contextualized instances across and within case studies focused on a similar theme” (Adelman, 2009: 907-908).

In this research, the case studies are examined using multiple data sources and data collection methods, which ultimately contribute to “theorising” about the

mediational role of the computer. Additionally, the data are analysed through the lens of AT in order to demonstate how the computer contributes to improving conditions in the language classroom. The ultimate goal, therefore, would be to determine which aspects of this constellation might represent a move toward the normalisation of CALL.

This sub-section, therefore, clarifies the basis for the application of the methods and instruments selected and it elaborates on how they are applied within specific case studies.

In each of the case studies, a select combination of data collection methods were chosen. These methods included:

- semi-structured interviews and structured questionnaires, primarily intended to obtain an emic view from the teachers about their approach to language teaching and the values ascribed to and attitudes concerning the use of media in general and the computer in particular within the general classroom learning experience as a first step in understanding the social structure of the classroom;
- skills assessment questionnaires to gather pupils' emic perceptions of their levels of competence in language, social and media skills within the language classroom in order to be able to establish a profile of the learners and in so doing, further develop the understanding of the social structure of the learning environment;
- learning preference questionnaires to seek details on pupils' preferences and experiences in the foreign language classroom in general and with regard to media in general and the computer in particular as well as with regard to the preferred social learning form;
- structured learner diaries and retrospective interviews to collect reflective thoughts and interpretations, that is, pupils' perceptions of their learning experience with respect to how they defined the interaction in the one-CALL classroom in terms of
    - how they defined what they learned
    - how they experienced the social learning form, particularly with respect to their interaction with each other and with the computer, and

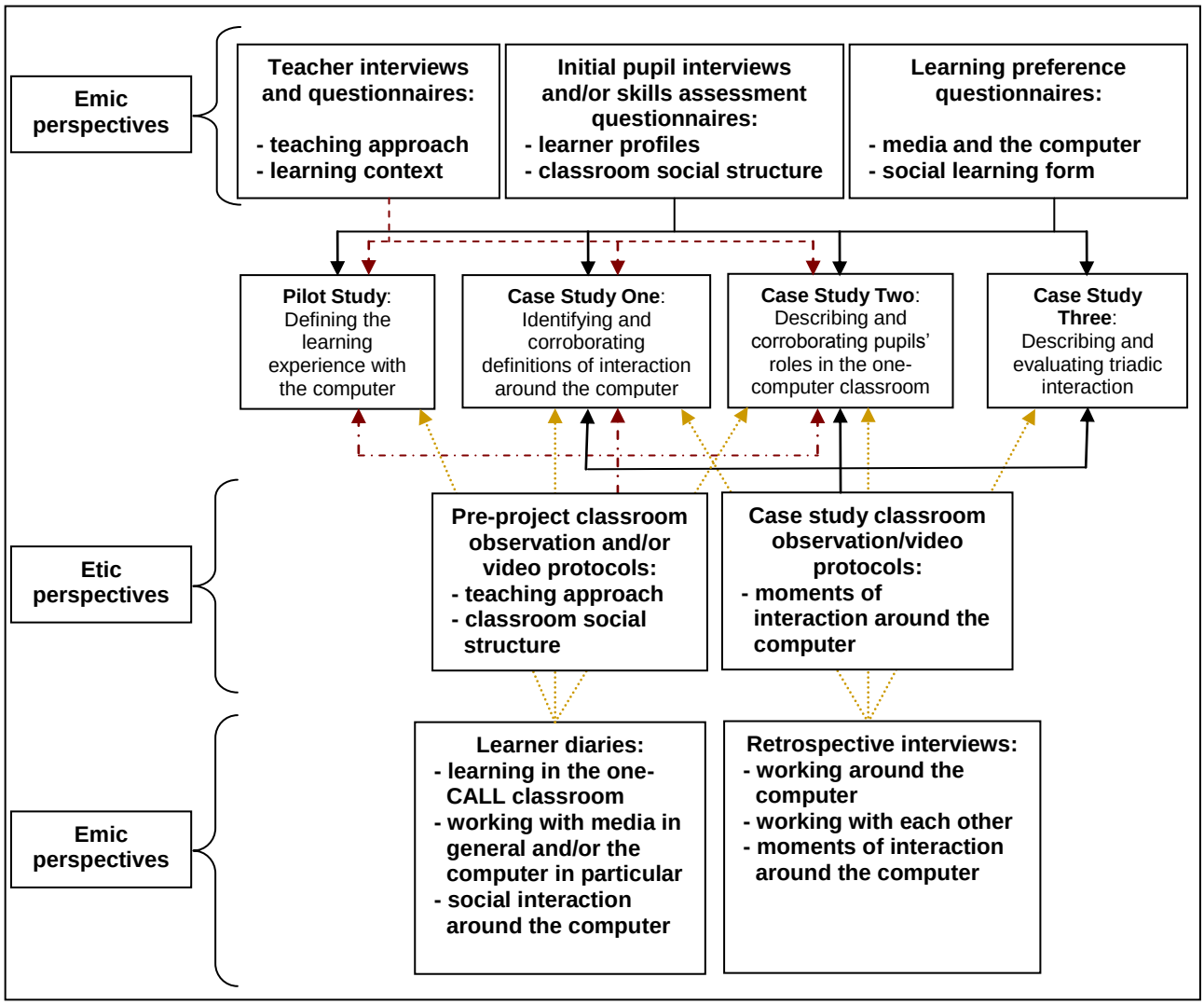
- how they experienced working with media in general and/or the computer in particular;

and finally,

- classroom observation notes accompanied by selected video protocols of student interaction, used primarily to offer an etic observer perspective; thereby complementing the emic perspective in order to offer a solid data triangulation framework.

Figure 5.4 illustrates the combination of methods used in each case study as well as the specific perspective from which the data were being collected as further defined in sub-sections 5.2.3.1 and 5.2.3.2.

Figure 5.4 Overview of the data collection methods organised according to emic and etic perspectives



This summary provided in Figure 5.4 also illustrates the specific function played by each of the data collection methods and instruments used in the various case studies, in terms of the data set which was generated and the corresponding issues addressed in each of the case studies.

5.2.3.1 Obtaining an emic view of the context

In attempting to understand the social structure of the context, the first step taken was to gain an insider view of the learning situation. This was achieved by soliciting the views of those making up the learning context, that is, the teacher and the pupils, using semi-structured interviews and questionnaires as well as learner diaries. This would contribute to an understanding of the social structure of

the class as a community as well as to establishing a profile of the participants, that is, the pupils themselves.

These views included not only their perceptions of the learning experience as a whole, but specifically in relation to the use of media in general and the computer in particular.

The interviews:

The interviews conducted with the relevant language teachers of the classes taking part in the studies as well as with a sample of pupils (see Appendix 1a) were face-to-face semi-structured interviews.

In all the studies, with the exception of the final case study (in which case I was the teacher), the teacher interviews sought not only to enquire about teachers' values and attitudes concerning the use of the computer, but also about their general approach to teaching. This would offer some insight into the specific classrooms under investigation as communities within themselves – an important aspect of framing the research within an AT perspective.

In the case of the pupil interviews, in the Pilot Study an interview was conducted with two representatives of the class as pupils had been asked to meet with me on a purely voluntary basis. While only two pupils were willing and able to make the extra time for the interview, their responses served to provide a starting point for understanding the values and attitudes of pupils concerning the use of the computer. These data would eventually be supplemented with other data sources such as a skills assessment questionnaire and a learning preference questionnaire as well as a learner diary.

In Case Study One, the same approach was adopted and the results from the initial interviews with three pupils also provided a starting point in understanding pupils' concept of how the computer was being and/or should be used in classrooms.

In Case Studies Two and Three, however, as the focus had turned to specific groups within the classroom, which would be investigated as independent units, that is, as 'systems' in themselves, each member of the groups working around the computer was interviewed to get a fuller sense of the values and attitudes shared by the members of these specific groups.

As was recognised in the Pilot Study, there was a further need to supplement this initial emic view with retrospective interviews, so that the perceptions of the pupils on how they experienced learning in the integrated CALL classroom could be brought more to the fore in providing an understanding of the nature of the interaction taking place.

In the final two studies, these retrospective interviews would take the form of stimulated recall interviews as this interview type would serve to more closely capture pupils' precise reflections on their interaction as they worked together (see Appendix 1b). According to Gass and Mackey (2007), "[t]o explore learners' thought processes or strategies, researchers can prompt them to recall and report thoughts they had while performing a task or participating in an event" (Gass & Mackey, 2007: 53). Furthermore, "[u]tilizing introspective methods can allow researchers and teachers to go beyond production data, and gain a deeper understanding of interaction from learners' perspectives…" (Mackey, 2002: 383). As this was precisely the objective, in the final two case studies which focused on learner roles, the stimulated recall interview was deemed to be a more valuable instrument than the learner diary.

The questionnaires:

In addition to the teacher interviews, a teacher reflection questionnaire was administered to provide further insight into the teachers' ideas and approach to language teaching and the role of media in general and the computer in particular in the classroom (see Appendix 2). Since teachers would have more time to consider their responses than they would in the interview, it was thought that the data collected via the questionnaire would provide more reflective thoughts and complement or provide a basis for discussion on the issues raised in the interview. This would be dependent on whether, owing to the organisation of the project and the schedule of the teachers, the questionnaire was administered before or after an appointment for an interview could be arranged. Additionally, the questionnaire would offer the teachers the chance to raise new issues which may not have been addressed in the interview.

As far as pupil questionnaires were concerned, prior to the start of each of the case studies, two pre-project questionnaires were administered. The first questionnaire, a skills assessment questionnaire, required the pupils to provide an

evaluation of their language, social and media skills (see Appendices 3a and 3b). These questionnaires consisted of questions requiring pupils to use Likert-style selections to indicate their preferred modes of learning as well as their particular areas of strengths and weaknesses. The data collected from these questionnaires helped in establishing learner profiles as well as an understanding of the social structure of the classroom and the social learning form in order to uncover the contextual factors (that is. the conventions and shared understandings) making up the classroom AS.

In the case of the learning preference questionnaire, in addition to contributing to the above-mentioned profiles and understanding, valuable insights regarding the question of established and expected roles within the classroom could be gleaned from this data source. This was particularly relevant to Case Studies Two and Three.

What should be noted here, as was the case with Appendices 3a and 3b), is that the skills assessment questionnaire created for Case Study One, which incorporated pupils' assessment of the use of the specific types of media to be used in the pre-project lessons, would be slightly altered for the main study in Case Study One as well as for Case Studies Two and Three where the focus would be exclusively on the computer see Appendices 4a and 4b).

In terms of the learning preference questionnaire, it should be noted that two versions of this questionnaire were also created and have both been included in Appendix 4. The first version, created for the Pilot Study, contained a number of 'closed' items and required pupils simply to indicate whether or not they had used the computer in specific contexts and whether or not they preferred to work in specific social arrangements. However, in order to give pupils a broader range of items to select from and to enable them to more freely state their specific preferences, a second version of this questionnaire was created for Case Studies One, Two and Three which contained more open-response items. These data would also be seen as sufficiently representative to create participant profiles in the three main case studies.

The learner diaries:

Gass and Mackay (2007) identify the use of what they refer to as L2 journals in diary studies as a suitable instrument in obtaining emic perspectives since they

enable learners "…to record their impressions or perceptions about language learning" (Gass & Mackay, 2007: 47-48). These authors go on to add that "[e]ven in studies that provide a structure for the diary writers to follow (e.g., certain topics to address and guidelines for the content) researchers are still able to access the phenomenon under investigation from a viewpoint other than their own" (Gass & Mackey, 2007: 48).

This objective falls in line with that of the present research in that the perceptions of the pupils themselves would be considered the most valuable source of data in understanding the nature of the classroom interaction. This would, in turn, lend itself to addressing the research questions in each of the case studies.

In the Pilot Study, learner diaries were therefore used throughout the duration of the study (see Appendix 5).

Pupils were asked to complete a diary entry following each lesson in response to questions concerning their general perceptions of the lesson, the social interaction within the group, the role and impact of the computer regarding their technical as well as their language skills and their recommendations for improving the lesson.

The learner diaries were divided into seven questions with each addressing at least one of the issues mentioned above. While the first and last questions were completely open, the five central questions required, firstly, a closed response (e.g. the choice of an adjective or a Yes/No response) and then the opportunity to further elaborate on this latter response by answering the question "Why?/Why not?" In this way, there was an ongoing exploration of the learning experience from the perspective of the learners.

In Case Studies One and Two, the use of the learner diaries was reduced to one single entry at the end of the study. This alteration was made as the number of sessions in which pupils would interact together around the computer would be limited to at least two sessions and data collected from the retrospective interviews would serve as a more focused supplementary data source.This would serve to provide insights into the interaction which would, in turn, contribute to responding adequately to the research questions related to defining the interaction and to the role of the pupils as well as of the computer. In Case Study Three, which would take the form of a replica study, as mentioned above, retrospective stimulated recall interviews were selected in favour of the learner diary as a means of capturing an even more focused explication of the interaction.

5.2.3.2 Obtaining an etic view of the context

In addition to the emic perspectives emanating from the point of view of the pupils and their respective teacher, an etic view was also obtained through classroom observation and video protocols.

Classroom observation and video protocols:

In each of the studies, I kept fieldnotes of my own observations of the classroom interaction which, in the case of the main case studies, I was also able to corroborate by re-examining video recordings which I made of the classroom interaction. To increase the rigor of my observation of the interaction of pupils working together, I enlisted the help of one critical friend per study who observed the video recordings after the respective studies were completed. Each critical friend was given what I refer to as a 'video protocol template' (see Appendix 6) and asked to identify, describe and classify the actions in which pupils were engaged during interaction. The classification was of particular significance as it would tangible indications of the pupils working as a unit, that is, collaboratively.

It should also be noted at this point, as will be discussed in greater detail in the following section that these critical friends also examined the data obtained from the learner preference questionnaires and the learner diaries in a relatively similar manner (see Appendix 7).

The classroom observation can therefore be said to have constituted a thick description of the interaction based on Heigham and Croker's (2009) definition: "Thick description refers to the rich, vivid descriptions and interpretations that researchers create as they collect data. It encompasses the circumstances, meanings, intentions, strategies and motivations that characterise the participants, research setting, and events" (Heigham & Croker, 2009: 322)

By using this form of meticulous documentation, I would be able to make inferences and draw conclusions, where it would be meaningful to do so, with regards to the nature of learner interaction.

5.2.4 Methods of data analysis

As alluded to in the previous sections of this chapter, a qualitative orientation to research lends itself to the collection of data from multiple sources and from

multiple perspectives. In the same vein, data analysis procedures also tend to be multimodal.

This multimodality is generally spiralled into a rather complex undertaking by the fact that these two processes (data collection and data analysis) are inextricably intertwined.

While Hood (2009) suggests that it is difficult to draw a clear line of demarcation between data collection and data analysis in qualitative research, owing to the fact that they can be said to both be taking place simultaneously (Hood, 2009: 78), in this sub-section I provide a breakdown of how each source of data was analysed using a system of inductive data analysis (Mackey & Gass, 2005). Mackay and Gass (2005) affirm that "[i]n inductive data analysis the goal is generally for research findings to emerge from the frequent, dominant, or significant themes within the raw data,... [and] is determined by multiple examinations and interpretations of the data in light of the research objectives, with the categories induced from the data" (Mackey & Gass, 2005: 179).

In order to present this process in as systematic a form as possible, the data analysis methods adopted for each data source will be presented as they were applied in the Pilot Study with respective alterations being presented for the ensuing case studies. This approach has been selected as some instruments may have been added or refined after being piloted.

In the Pilot Study, the first instruments used to collect data were the teacher interview and questionnaire. The interview was audio-taped and transcribed adapting the transcription conventions proposed by Richards (2003) (see Table 7).

Table 7 Basic transcription features for interviews adapted from Richards (2003: 81-82)

Action	Example of use of transcription symbol/character
Making a short pause (-)	I'm not sure, (-) maybe it means...
Making a long pause (+)	Let me think. (+) O.k...
Placing emphasis (*italics*)	*This* must be it.
Using fillers (' ')	It's, 'um', not that one.

Using explicit intonation (?/!)	What did you say?
Not being audible or clear (...)	Sometime it means (...)
Using non-verbal features (( ))	((laughs))

Both the transcriptions and the completed questionnaire were then analysed adopting Dörnyei's (2007) 'latent level analysis'. Dörnyei describes this form of analysis as the qualitative paradigm version of quantitative content analysis. As this author explains, whereas quantitative analysis can be considered " 'manifest level analysis', because it is an objective and descriptive account of the surface meaning of the data,... 'latent level analysis…concerns a second-level, interpretive analysis of the underlying deeper meaning of the data….which comprises "four phases of the analytical process: (a) transcribing the data, (b) pre-coding and coding, (c) growing ideas – memos, vignettes, profiles, and other forms of data display, and (d) interpreting the data and drawing conclusions" (Dörnyei, 2007: 245-246).

In the pre-coding and coding phase, in order to ensure that the emic perceptions were being accurately represented, the coding system consisted of identifying key words or code words within teachers' statements which summarised a specific view regarding language teaching and learning, the learning arrangement and the role of the computer – the three themes addressed in the research question posed in the Pilot Study (see section 5.2.2). Although the research question aimed at drawing out the perceptions of the pupils, it was thought relevant to include the views of the teacher for three specific reasons.

Firstly, this data would contribute to establishing a more complete understanding of the context as seen through the lens of AT, since the teacher forms part of the community with its conventions, rules, division of labour and general practices. In this way, the teacher's perception of the learning experience is therefore essential to the representation of the classroom AS.

Secondly, it would serve to corroborate or point at tensions in the classroom experience when juxtaposed with the perceptions of the pupils – another relevant aspect in the representation of the AS.

Thirdly, and with direct reference to the procedure for data analysis, having the teacher's perception as an initial or additional data source would facilitate a process of constant comparison. The constant comparison method, rooted in the

grounded theory approach, allows researchers to ensure that the catergories they are developing as they classify code words, for example, can be confirmed in a continuous process of cross-referencing (Murray, 2009: 51). In other words, the views of the teacher would provide a data source against which categories established in the data sets provided by the pupils could be further verified and thereby provide as sound an empirial base as possible for determining the precise ways in which the learning experience is perceived.

Once the teacher's views on the learning experience were analysed, the perceptions of the learners, as articulated in the interviews with two volunteers from the class were analysed in a similar manner.

As with the teacher interview, the initial interviews with the pupils were also transcribed and code words related to the themes reflected in the research question, as stated above, were identified, grouped together to form categories and classified using headings derived from the very texts. Again, this helped to preserve the emic nature of the findings.

As previously indicated, an even more precise understanding of the context was important in determining which features make up and impact on the learning experience. Since some of these understandings are wrapped up in pupils' perceptions of their classroom experience, the data provided by the learning preference questionnaire, was again coded, categorised and classified.

The results of this questionnaire would therefore serve as a source for the initial findings in response to the research question and could be further confirmed or dispelled when corroborated with the analysis of the data from the learner diaries.

In order to build the learner diary data set, during a total of seven sessions, spanning a period of roughly three months, pupils were asked to share their perceptions of the use of the computer in the language classroom by completing a structured learner diary.

A total of 126 diaries collected during this period were considered valid on the basis that sufficient items were completed in each case to give a representative impression of the classroom experience on the day in question.

Each of the diary entries was then analysed using the latent level analysis method described above primarily to uncover the various ways in which pupils defined their learning experience as impacted on by the computer as a complementary mediational means in the classroom.

As consistent with the constant comparative method, these findings were further triangulated with an analysis of the fieldnotes I had taken throughout the project.

As these observation notes were made independently of and prior to obtaining learner perceptions, they were considered a valid source for corroborating findings coming out of the pupils' data set. In this way, the emic perspectives would be supplemented by the etic perspectives which I was generating as a researcher-observer.

After taking notes during the various sessions, I then annotated them with my reflections and interpretations of how the pupils seemed to be experiencing the learning event at hand, following the process of precoding, coding, memoing and classifying the data. With regard to the process of memoing, as Cowie (2009) suggests, researchers are required to specify the "dimensions" of the experience they wish to elucidate. The memos created based on the data collected in this research project, can therefore be said to have fundamentally addressed four key dimensions (adapted from Spradley's (1980) proposal of key dimensions of observation as cited in Cowie, 2009: 172 – see Table 8): Actors, Activities, Objects and Acts.

Table 8 Key dimensions of observation (Cowie, 2009: 172)

Dimension	Definition
Space	The physical place or places
Actors	The people involved
Activities	A set of related acts people do
Objects	The physical things that are present
Acts	Single actions that people do
Events	A set of related activities that people carry out
Time	The sequencing that takes place over time
Goals	The things that people are trying to accomplish
Feelings	The emotions felt and expressed

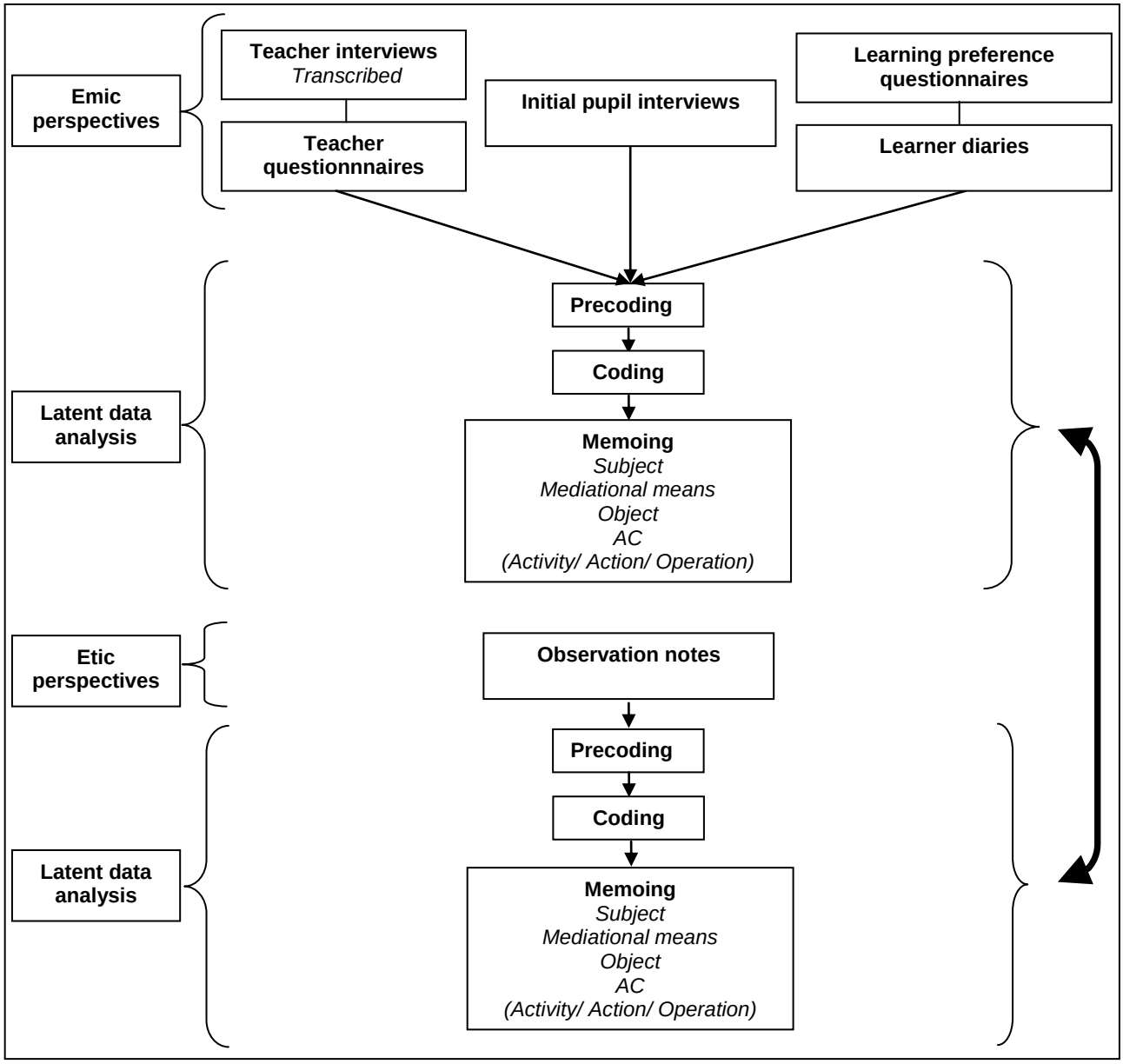
Source: adapted from Spradley (1980, p.78)

These specific dimensions were, however, reformulated to fall in line with Engeström's (1999) understanding of these elements, that is the subjects, the

mediational means, the object and the hierarchy of activity at the AC (activity, action, operation).

In the end, it is the triangulation of the findings emanating from the analysis of the various data sets which formed the base upon which Research Question One could be responded to (see Figure 5.5).

Figure 5.5 Overview of the process of data analysis prior to categorisation and classification in the Pilot Study



The teacher and pupil questionnaires and interviews in Case Studies One, Two and Three were analysed using the same approach outlined for the Pilot Study, as were the learner diaries in Case Studies One and Two.

Additionally, in all three case studies, a skills assessment questionnaire, which was developed to create a closer look into the skills of the pupils, was administered. These questionnaires were quantified to determine the spread and general tendency of the group in terms of their perception of their language, social interactional and media skills.

The pupils' individual evaluations of each skill based on a five-point Likert scale numbered from 1 to 5 (that is, from very high to very low) were added together to arrive at the total number for each skill level. These totals were entered into an excel table in order to be able to convert the results into a bar chart comparing the range of preferences in each skill area. According to Kirchhoff et al. (2010), in using such graphic representations, an image of the relationships represented in the data can be more quickly captured than via the use of a table (Kirchhoff et al, 2010: 59).This would therefore contribute to creating a participant profile as statements could then be made describing the group as a community with regard to the group's homogeneity or heterogeneity and how this seems to impact on the learning constellation.

Furthermore, in Case Study One, the learning preference questionnaires were no longer only used to provide descriptive data related to the learning context. These questionnaires also went through a process of latent level analysis to identify descriptors pointing to the pupils' perceptions of media in general and the computer in particular in line with Research Question Two.

Similarly, in Case Studies Two and Three this analysis sought to identify pupils' perceptions of their roles and that of the computer, again in direct response to Research Questions Three and Four.

One aspect of the analysis which was added in the case studies which was not yet included at the Pilot Study phase was that of aligning the perceptions with theoretical definitions. In attempting, therefore, to locate these descriptors or emic definitions of the experience with descriptors already existing in the research literature and thereby respond more specifically to the general research goal of identifying the specific and observable ways in which the integrated CALL contexts defined in this reseach can constitute an effective learning environment, Hubbard's (2009) proposal for defining learning improvement in terms of its effective use in CALL classrooms was considered.

As will be presented and discussed in further detail in Section 6.2, Hubbard's (2009) proposal offers a sufficiently expansive range of perspectives which lends itself to considering the role of the computer beyond its traditionally restricted computer-as-tool metaphor (see Sections 2.2.1 and 2.2.2).

On this basis, the classifications coming out of the analysis of data were incorporated in reformulations of Hubbard's (2009) proposal. This means that by matching a pre-established theoretical view up against context-specific empirical findings, the former could be further substantiated.

Another adjustment in the data analysis which was made in the case studies was the goal with which the learner diaries were analysed. While the method of analysis would remain the same, it should be reiterated here that whereas in the Pilot Study the learner diaries were kept throughout the study, in the case studies pupils were asked to fill in the learner diary at the end of the study. This decision was made owing to the fact that in the case studies, there would be a more intense focus on moments of interaction (see Section 7.1). In this case, the aim of analysis would also be adjusted to address the respective research questions focusing on the actual interaction. According to Bowles (2010) this is one of the many considerations which is required in the qualitative research process. As he says, "Coding schemes must be developed and tailored to the research question being investigated" (Bowles, 2010: 126).

A further consequence of this more intense focus on the learner perspectives, as previously mentioned, was the incorporation of retrospective interviews.

The method of analysis, however, would remain the same as that applied to the initial interviews, following the grounded principle of the latent level analysis. In this respect, the pupils would also have a chance to give more focused reflection on the experience, consequently adding to the depth of the findings.

Finally, as indicated in Section 5.2.3.2, in each of the case studies, the etic perspective was captured and incorporated through the use of fieldnotes, corroborated with video protocols and the complementary analysis of critical friends.

It should be noted at this point that for reasons which Mayring (2002) refers to as reasons of selectivity, this intense focus now placed on the moment-by-moment actions of the pupils would be limited to the number of sessions in which pupils would be engaged in interaction around the computer. According to Mayring

(2002), opting for 'selective protocols' in the observation process, avoids the inclusion of unwanted data which have no relevance to the particular focus of the research (Mayring, 2002: 94). This author, however, cautions that criteria for observation needs to be established in advance and applied in a consistent manner. As the observation "dimensions" had already been selected based primarily on features of the AS, as previously mentioned, this potential challenge did not become an area for concern. The observation of specific moments of interaction would, therefore, allow for a more microscopic analysis of the data.

In the first stage of analysis of the etic perspective in the case studies, therefore, the fieldnotes were analysed in the same manner as in the Pilot Study. Protocols of the video clips of moments of interaction off-computer (as was the particular case in Case Study Two) and on-computer interaction were then created.

With regard to the video recording of pupils' interaction in this research, it can be said that these served a function distinct from the function for which it is commonly used in SLA studies, for example, where the focus lies mainly in an analysis of the discourse or conversation.

In this research, the video protocols offered a detailed visual replica of the episodes of interaction.

DuFon (2003) suggests, that despite its limitations of capturing "only what is observable" (DuFon, 2003: 44), video recordings can be a rich source of visual information.

Citing Gass and Houck (1999), this author concludes, "...the visual information in videos also provides information on directionality and intensity of attention, which can be particularly useful in determining different levels of comfort and involvement of the interlocutors" (DuFon, 2002: 44). She adds, "[t]hese kinds of visual contextual information, then, can enrich our data base in many ways" (DuFon, 2002: 44).

It is in this light that this research creatively adapts this unique way of capturing and freezing episodes which shed light on the contextual factors operating in the one-CALL classroom. These factors define the nature of the interaction and serve, ultimately, to corroborate the perceptions expressed by the learners themselves. These protocols therefore consisted of a thick description of the moments of interaction with accompanying memos identical to those made on the field notes.

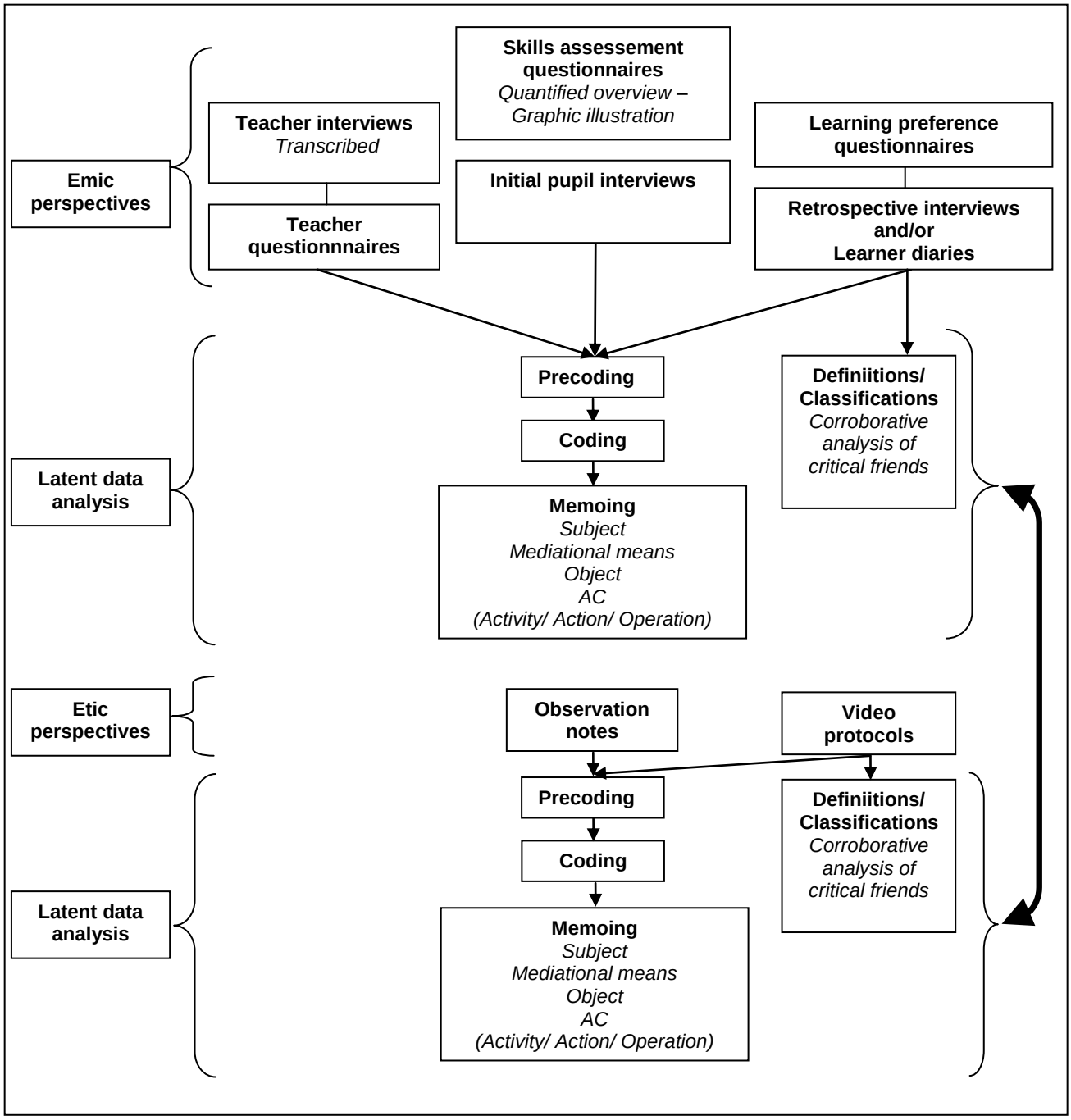
This made it possible to analyse the data in the same manner as that of the fieldnotes and to make cross references.

In the final stage in which I engaged the help of fellow research colleagues or so-called critical friends, the video data were analysed using a template in which each action was first described in 5-10 second intervals and then coded in a parallel column according to the researchers' interpretation of collaborative interaction. This means that the research colleagues marked (using the symbol "x") each moment of collaborative action defined as *actions indicating that pupils seemed to be working together as a unit*.

Overlaps between the actions described, and marked as collaborative, and the memos, specially interpreting collaborative actions, were then compared. These were therefore used to corroborate the findings by substantiating the categories and classifications identified as grounded in the data and indicative of collaborative interaction.

It should also be noted that in Case Studies One, Two and Three, this process of analysis carried out by my critical friends was also applied to data coming out of the learner diaries (see Figure 5.6).

Figure 5.6 Overview of the process of data analysis prior to categorisation and classification in the case studies



In the end, the findings of these various perspectives were cross-referenced to ensure that the conclusions being made could be verified by at least two sources. Again, it cannot be overemphasised that this triangulation, as Johnson (1992), cited in Mackay and Gass (2005) notes, is particularly valuable in studies involving observation. Putting it in precise terms, Johnson's view is that "[t]he value of

triangulation is that it reduces observer or interviewer bias and enhances the validity and reliability (accuracy) of the information" (Mackay & Gass, 2005: 181).
This, according to Yin (2003), contributes to the reliability of the research in that the claims made should be replicable if the study were to be conducted with another population; making it crucial for qualitative research to document, with as much accuracy as possible, the details of the learners as well as the steps taken in the research process.
In attempting to build a substantive theory, or what might be more accurately defined as a 'context-specific theory' (Heigham & Croker, 2009: 314) within the framework of this research, reliability in this sense, was particularly important among the very cases being investigated.

5.2.5 Presentation of findings and discussion

As has been previously pointed out, qualitative data analysis does not begin and end using a linear path. Rather, during this process of identifying categories, creating classification, cross-referencing and triangulating in general, ideas are being established and substantive or context-specific theories, as in the present case, are being formed.
In this research, this cyclical process was rounded off at the point when the data set had provided a sufficiently complete picture of the learning experience in the specific contexts. In other words, once the evidence provided following the different levels of analysis could be synthesised to produce a consistent view of the phenomenon (fundamentally interaction in the one-CALL context), understandings were stated and conclusions were drawn.
In this end phase of the research process, the findings are presented and discussed in light of the research questions.
In order to present and discuss the findings in a cohesive manner, this research adopted a model approach consisting of two forms of representation: The production of AS models and CALL texts. In the following sub-sections, these modes of presenting and discussing the data will be elaborated upon.

5.2.5.1 Creating AS models

As already discussed in Chapter Four, AT provides an appropriate framework within which classroom processes can be explained. As this research project focused on the contextual features of an integrated CALL classroom as well the

interaction taking place within the classroom constellation, the use of AS models to represent and explicate this interaction in terms of its very nature and the roles of the participants was opted for.

This means that for each case study, an AS model was created which would synthesise the findings coming out of the data analysis as they provided answers to the research questions.

The AS would therefore illustrate not only roles and relationships, but demonstrate the actual nature of the interaction by including an amplified representation of the AC.

In so doing, I attempted to build a case for the ways in which the learning conditions of the language classroom can be said to be enhanced by the one-computer constellation and conclude by deducing, based on the evidence provided, the extent to which the normalisation of CALL might be considered to be represented by this constellation.

As previously alluded to, this AC forms a new dimension of the model in which details of the process, as linked to roles and relationships, can be depicted and explained.

In this way, the findings are not located in a static illustration, but are articulated in an "explanatory" field within the model.

5.2.5.2 Creating CALL texts

Throughout the research project data were collected during interaction phases in the form of "texts". These so-called "texts" or the dialogue in which pupils engage and which are reflective of the nature of the interaction are far more than raw data. As Chapelle (1994) defines them, CALL texts are "the observable record of the process of learners' work on CALL activities" (Chapelle, 1994, cited in Chapelle 2000: 206). More specifically she sees them as "...the data used by researchers to document the language and interactions relevant for empirical based descriptions of CALL" (Chapelle, 2000: 208).

One significant end product of this research endeavour, therefore, can be considered to be the creation of additional CALL "texts" called for by Chapelle (2000).

Chapelle (2000) goes on to promote their value by explaining that "[t]he application of descriptive methodologies to CALL requires examination of CALL texts... If texts

for a variety of CALL activities were documented, one could begin to analyse ways in which they are similar and different...” (Chapelle, 2000: 208) see Table 9.

Table 9 Examples of CALL texts from a variety of CALL activities (Chapelle, 2000: 208)

Interaction between...	CALL text	Setting
Learner-computer	Drulla [Computer]: Play please! Student: Okay. Drulla: Thank you. What should I do? Student: You should tell me where the glass is. Drulla: The glass is on the table. Student: Try laying it inside fridge. Drulla: Very good.	An individual learner’s output of commands to computer and computer’s response (Murray, 1995, p. 248)
Learner-computer	Computer: I have learned quite large number of words. Is there an error in this sentence? R: I have learned quite large number of words. Is there an error in this sentence? M: quite large number R: I have learned quite large number. M: quite large number, quite large number	Learners sit together in front of a computer reading from the screen and discuss their responses to questions (Abraham & Liou, 1991, p.105)
Learner-learner	Kang: Alda, est-ce que tes parents parle à toi en chinois et tu parle aux parents en anglais ? Moi, mes parents ne parlent pas en anglais, mais je leur parle en anglais en meme temps. C’est-ce que un peu bizarre. Billy : Alda, est-ce que vous êtes chinois ? Si vous êtes chinois, avez-vous célebré la nouvelle année chinoise hier ? Avez-vous reçu d’argent de votre famille ? Kang : Alda, pourquoi «tu n’aime pas trop» de traditions chinois? Que pense-tu a la NOUVELLE ANNEE de Chinois?	Learners discuss the topic “inter-generational differences” through computer-mediated communication (Kern, 1995, pp. 458-459)

It is based on this recommendation that as CALL researchers we use our findings to form part of a shared understanding of effective CALL, the very goal of this research, that each case study offers at least one CALL text representing the particular constellation. This not only adds to the broader research context, but

offers a further synthesis of the findings in a form which can also be considered accessible and of interest to classroom practitioners.

5.3 Situating the research: concept and context

Before presenting the setting in which the research was conducted, I will go back to the initial concept which served as the motivation for carrying out the studies to then be able to justify the contexts selected and give an overview of how they were accessed.

5.3.1 The classroom divide

As stated at the onset of this work, the research project takes as its starting point the concept of bridging the digital divide at the classroom level. Going back to Warschauer's (2003) elaboration of the way in which the digital divide has been re-conceptualised to represent the effective ways in which ICT can be used to promote inclusion, it can be noted that there is room for expanding this concept of the digital divide to include promoting conditions for effective learning within the classroom context (Egbert & Yang, 2004). As previously indicated, in critiquing the view of the concept of the digital divide for exclusively representing the disparity between the haves and the have-nots, Warschauer (2003) states that "...the digital divide framework provides a poor road map for using technology to promote social development because it over-emphasizes the importance of the physical presence of computers and connectivity to the exclusion of other factors that allow people to use ICT for meaningful ends" (Warschauer, 2003: 7). While Warschauer's (2003) emphasis is on social inclusion at a general societal level, I approach this same issue as it applies to the classroom divide.

In transferring the concept of the social digital divide to the classroom divide as also proposed by Egbert and Yang (2004), this research project was conceptualised to uncover the precise factors operating within the one-CALL classroom context which turn the traditional view of the digital divide on its head.

As also mentioned in the introduction, this refers to reconsidering what might typically be considered to be an LTE, that is, an environment labelled as "limited" in terms of the unavailability of computers. Here it is being argued that in its flipped version, such an environment can represent a rich learning context if just one computer, for example, is being used in a meaningful way.

It is, therefore, in attempting to explore the possibilities afforded by the one-CALL classroom, where the emphasis is on integrating the computer into the daily classroom experience that this divide at the classroom level can begin to be bridged. In other words, it is the connection which can be made between limited numbers and effective conditions for learning which this research addresses by looking at the nature of interaction occurring in this environment.

In order to fulfill the research agenda, therefore, by considering one of the ways in which this classroom divide can be addressed, it was deemed necessary not simply to locate and carry out case studies in classrooms which represent the flipped version of the LTE, but firstly to consider the extent to which such environments are in fact represented in reports on the use of ICT at an international level in general and, more specifically, in the countries in which the studies would be carried out, that is Germany and Trinidad and Tobago.

5.3.2 ICT in the classroom

Looking firstly at research on the use of ICT in schools within Caribbean and European countries, I found there to be some discrepancy between the image presented by data revealing increasing numbers of computers used in schools and proof of the effective use of these resources. This can be seen if one were to look at the current international trends in ICT in education, that is, the facilities and functions of newer technologies, and compare them with their current status in terms of the way in which they are adapted in the actual school context or the factors influencing this process. Table 10 provides an overview of these trends and the actual status of each based on research published in the mid 2000s by the Natoma Group (an independent international consultant group in learning, technology and development). It reports on trends in the use of ICT in primary and secondary schools in countries around the globe (see Table 10).

Table 10 Overview of current international trends in ICT and their current status in education (Gaible, 2009a: 20)

Current International Trends in ICT in Education

Trend	Description	Current status
Policy facilitation	Provision of technical assistant and other support to MOEs for the development of ICT policies in education	■ Demonstrated value over the past ten years ■ Resulting policies may set goals (i.e., integration of ICT) that are unrealistic or require much more time than planned
Procurement via leasing	Acquisition of large numbers of computers or software licenses through vendor-direct leases rather than purchase	■ Costs paid from operations, not capital acquisitions ■ Costs may be lower or may be spread over several years
Total Cost of Ownership	Budget forecasting that calculates cost based on all relevant factors (e.g., training, maintenance, depreciation, etc.)	■ Much more accurate for planning purposes ■ Accuracy decreases as the timeframe expands ■ TCO model enables cost comparison, does not calculate or compare benefits
Interoperability frameworks	Standards for data transfer across diverse hardware platforms and networks	■ Critical for cost-effective EMIS ■ Older hardware and software versions may not be addressed
Active-learning pedagogies	Emphasis on learning by doing (i.e., projects, activities, etc.) rather than learning by listening	■ Effective support for development of higher-order thinking skills ■ Strong linkage to integration of ICT ■ Requires changes to curriculum, assessment and TPD to be adopted system-wide
Collaborative online projects	Student teams share information, knowledge, and research results to accomplish mutual goals	■ Commonly among the first widely practiced models for ICT integration ■ Limited technology requirements ■ Rarely addresses core curriculum or lesson plans
Balanced pedagogies	Combination of holistic or semantic-level approaches to literacy and numeracy with back-to-basics methods such as phonics	■ Well-supported by research and by teacher accounts ■ Requires sophisticated approach to curriculum reform ■ Teachers must be "brought on board" the program
Blogs by teachers and students	Use of blogs to share organizational information, to promote writing skills, and to support small-group collaboration	■ Easy to use, effective means of enabling student publishing ■ High levels of student interaction ■ May appeal to students with pre-dispositions to write, while having less value for other students
Probes, digicams, and other primary-research tools	Use of portable or peripheral hardware to collect data from the environmental or lab phenomena	■ Helps students build data-representation skills ■ Makes abstract concepts more seemingly real and easily grasped
Anti-plagiarism tools, services, and activities	Software and services in response to increased potential for copying passages or whole documents without attribution	■ Many options, ranging from Web-based tools to services that check student work for teachers
Wireless networking	Use of wireless networking technologies to create LANs in schools	■ Flexible, with lower installation costs ■ May lack adequate bandwidth for intensive school-wide use
Thin-client networking	Hardware configuration in which all computing power and data reside on server (or servers) connected by network to otherwise "dumb" terminals	■ Reductions in acquisition and maintenance costs ■ Support for open-source software (Linux) and refurbished hardware
One-to-one computing	System-wide provision of laptops to students, or: Use of specific technologies (digital whiteboards, digital tablets) to support increased real-time interaction in classrooms	■ Open-source software is linguistically customizable ■ Adopted by several states and many school districts in the U.S. ■ Core pedagogical model for the One Laptop Per Child project ■ Not yet proven to enhance learning outcomes

Source: The Natoma Group

Among the trends identified in this table, for instance, is the trend toward active-learning pedagogies. On examining the actual status of the way in which this trend seems to be advancing, one notices that only its potential and the requirements to have it implemented are articulated, rather than evidence of the fact that,

internationally, pupils have in fact been able to develop higher-order skills as a result of this trend.

Another example, and one of particular interest to this present work, is the use of the computer at the classroom level on a one-to-one basis. Though some initiatives have been reported within the U.S.A., Canada and in some states in Asia to push forward this concept of one computer per child, Gaible (2009a) reports that "…one-to-one computing remains the exception in developed-country educational systems, not the rule" (Gaible, 2009a: 27). While developing countries in Latin America, Africa and some parts of Asia are also prepared to follow suit, according to Gaible (2009a), research as to the effectiveness of this 1:1 ratio remains elusive, with some researchers arguing that "the 1:1 ratio is **not** advantageous for students, teachers or schools" (Gaible, 2009a: 28, emphasis added).

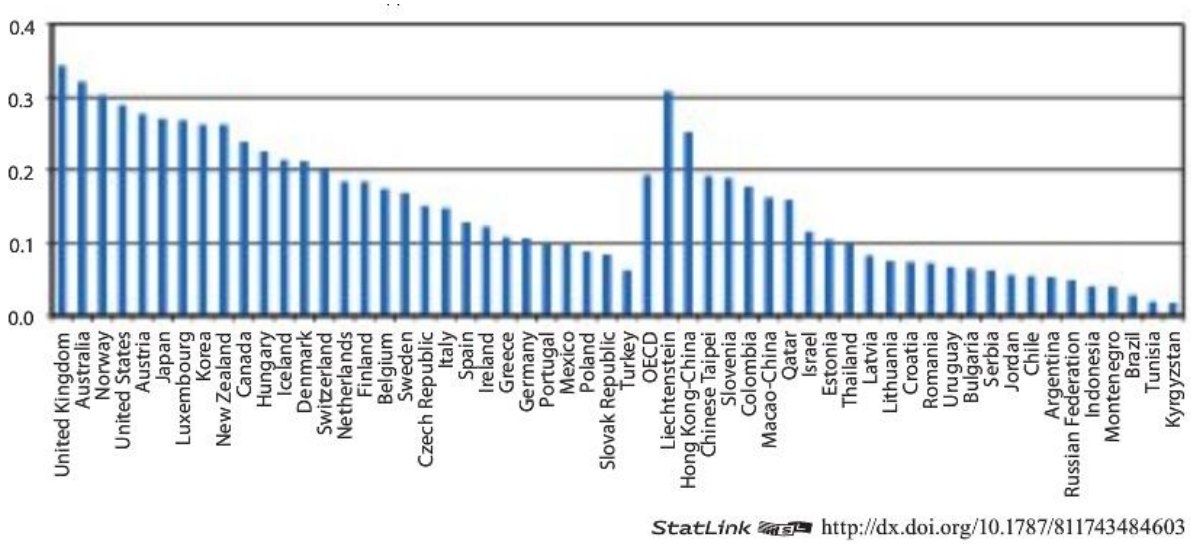
While researchers may not venture as far as expressing such an absolute claim, Beatty (2010), for example, in referring to ways of organising the classroom, states that "…with the rising power of laptop computers and corresponding wifi wired environments, a separate CALL classroom is less and less necessary. However, such computer labs are still common and there are many ways to organise them depending on funds available, the number of computers available (from one at the back of the classroom to a class set)" (Beatty, 2010: 127).

This researcher therefore makes it clear that there is no one fixed arrangement which can or should serve as a blanket formula for CALL classroom design. Noticeable in his comment, though, is that even the one-computer classroom is featured as a possible option to teachers looking for ways to organise their CALL classroom.

This suggests that in instances where a full range of computers may not be available for use, which in the context of the classroom divide is not the main focus, a CALL classroom with one computer is a potentially valid option.

Furthermore, yet another international repor conducted by the Organisation for Economic Co-operation and Development (OECD), 2010, provides an overview of the use of ICT in schools by recapitulating data from the PISA 2003 and 2006 databases. This report supports the findings of the research done by the Natoma Group on the ratio distribution of computers to students – again emphasising the elusive 1:1 ratio (see Figures 5.7 and 5.8).

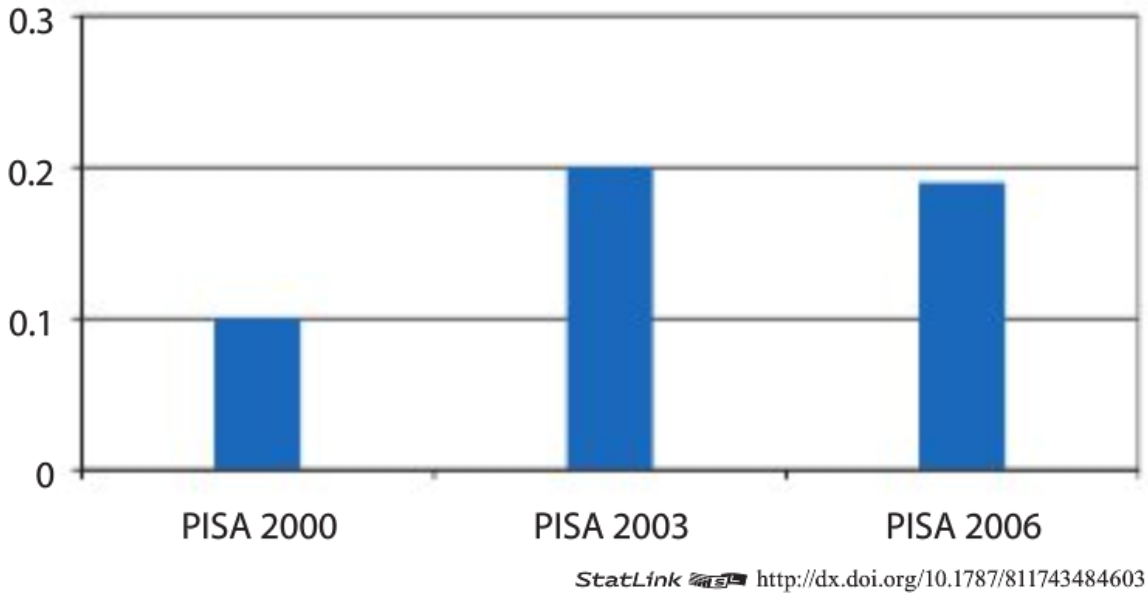
Figure 5.7 ICT resources at school: Number of computers per student



OECD and partner countries are grouped separately and ranked in descending order of number of computers per student.

Source: OECD PISA 2006 Database.

Figure 5.8 ICT resources at school: OECD average of computers per student, years of PISA survey



Source: OECD PISA 2006, PISA 2003 and PISA 2000 Databases.

This view of the general reality of the global classroom situation presented above, therefore, in which the availability of computers at schools is forthcoming, though not necessarily on a one-to-one (computer-to-pupil) basis at the classroom level, reveals a notable paradox. This paradox lies in the fact that despite the increase in

numbers of computers available at schools over the years, there appear to be no parallel large scale proof of the enhancement of learning outcomes at the international level. In other words, it has not been confidently claimed that more (larger numbers of) computers necessarily promote improved conditions for effective learning.

These findings suggest that despite the 'provision', "acquisition" and "use" of increasing numbers of newer technologies, along with a recognition of appropriate pedagogies, the actual application and proof of the way in which the "core curriculum" or "lesson plans" demonstrate effective use still seem under-represented in large scale reports.

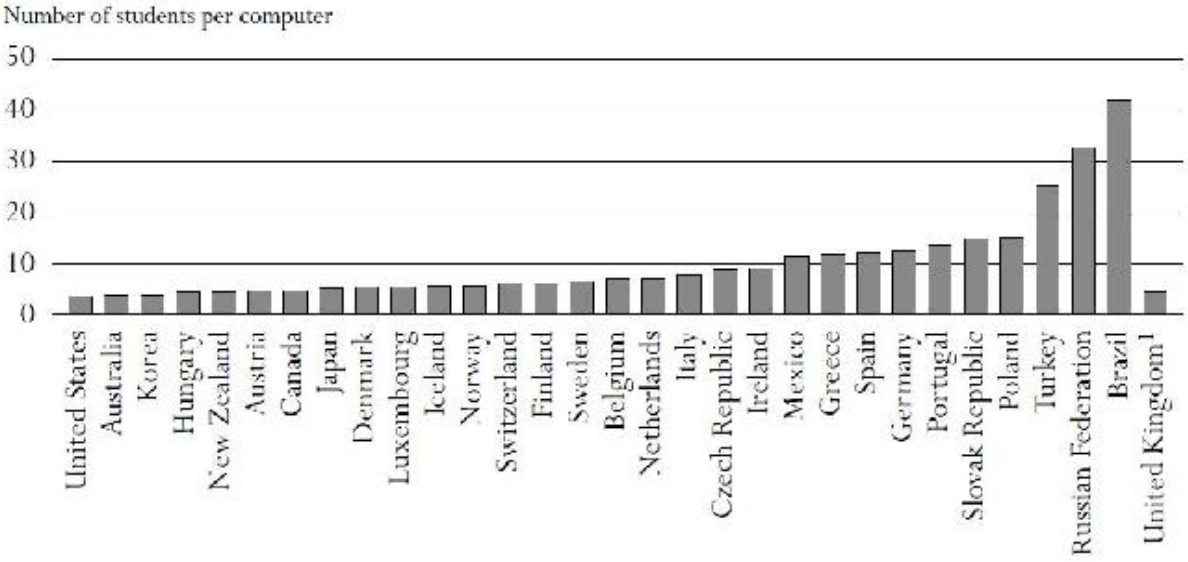
It is therefore fitting for research to continue to consider the ways in which learning conditions in schools supported by ICT can be said to improve, bearing in mind the quantity vs. quality paradox described above.

This research project can, therefore, be said to have begun as an attempt to examine the inverse side of the situation, which can be defined as the deliberate use of fewer computers to address one of the key aims of ICT initiatives: "to stimulate high interactivity among students…" (Gaible, 2009a: 27), given the reality of classrooms globally (that is, limited numbers of computers). Put another way, this flipped version of interpreting ICT effectiveness at schools would allow for a realistic consideration of the way in which real classroom contexts can also tap the potential of ICT effectiveness which some erroneously perceive only to be attainable with large numbers of computers.

If one were to take a closer look at the two specific national contexts in which I had the opportunity to conduct research, Germany and Trinidad and Tobago, it would become apparent that their situations are relatively representative of the reality of the global scene depicted in the following figure (see Figure 5.9). With specific reference to Germany, the report shows a status of more or less ten computers per student.

Figure 5.9 Number of students per computer (2003)

Virtually all students in OECD countries and partner countries are in schools with at least one computer, but there is substantial variation in the number of computers available to students: around one computer for nearly 3 students in the United States and Australia against one computer for 42 students in the partner country Brazil.



1. Response rate too low to ensure comparability.
Countries are ranked in ascending order of number of students per computer.
Source: OECD PISA 2003 database, Table D5.1.

In the case of Trinidad and Tobago, available data reveal that all schools have been serviced to some degree with computers, though maintenance appears to be a big issue. Owing to an initiative brought to life in 2006-2007 to address this issue, a further 7,000 computers were to be made available for distribution at the primary level (Gaible, 2009b: 67). See Table 11.

Table 11 ICT resources in schools in Trinidad and Tobago (Gaible, 2009b: 66)

ICT Resources in Schools

School type	Number	Median enrollment	ICT profile
Primary schools, govt. government	481	283 (2002/3)	■ Roughly 80 schools have received 10-computer labs; many computers are no longer functioning
Secondary schools, govt.	132	817 (2002/3)	■ 2006–2007 installation of 34-computer labs, networks, computers on carts, and administrative computers in all schools

Source: MOE

In summary, it can be said that given this situation, which even in its current state still leaves room for improving the effective use of technology in the classroom (Government of Trinidad and Tobago, 2012; Karpa et al., 2013), exploring this flipped version constellation within these contexts in order to identify where effective or improved learning conditions can be said to be created is a warranted endeavour.

5.3.3 Gaining entry into the field: The Pilot Study

Having established the research agenda and identified contexts in which the research could be conducted, the research process began by seeking entry into the field. The challenge was therefore to identify specific classroom contexts in the two countries in which I had developed or was developing connections with teachers at the time. For practical reasons related to the ease of gaining entry into schools already working in cooperations with the University of Duisburg, I initially decided to limit my research base within Germany to secondary schools already linked to ICT projects with the university. The school in which I conducted the Pilot Study, for example, was already a partner school of the University of Duisburg and had been working with ICT researchers to trial software developed by a research team. After becoming aware of this partnership and having had the chance to view a presentation of this project, I approached the teacher with whom the team had been working and arranged a visit to the school. There, I was able to establish contact with teachers in the English department and was introduced to one English teacher who was willing to work on a project related to the integration of the computer in the classroom.

From our discussions, it was clear that there was no conflict of interest between my goals as a researcher and her pedagogical goals as a teacher.

We were therefore able to agree on a cooperation and arranged for a series of meetings, firstly with the principal of the school, other members of the teaching staff and a tour of the facilities, before embarking on detailed plans regarding the research project.

It should also be noted at this point, that one key aspect established as part of the cooperation was a clear definition of the task. In order to ensure that the research and pedagogical objectives fell in line with each other and that the authentic classroom experience was not disturbed, it was agreed that teacher would firstly determine in which way she imagined the computer could best support the pupils in keeping with the syllabus requirements and which would also not disrupt her teaching schedule both in terms of time and content.

After considering her various classes, she proposed that we consider the value of the computer to support ninth graders (average age: 14-15 years) who were required to develop presentation skills by the end of the year. We agreed that the pupils could use the computer as a medium for preparing and presenting a topic agreed upon by the teacher since the topic had to be in line with the content for the school year.

In short, the task would require pupils to prepare a presentation, using the support of the computer and the document-editing and presentation software programme specifically designed to support collaborative document creation. This would help them in applying the principles of process writing approach to structuring a text (see Appendix 8). At the end of the series of lessons which they would need to complete this preparation, they would subsequently be required to share the results with the whole class. As the one-CALL constellation in this research entailed using the computer along with other classroom artefacts like worksheets, for example, it was agreed that the pupils would work in groups, with each group taking turns at the computer in a rotation agreed upon by the whole class.

According to Kessler (2013), such dynamic and flexible group arrangements which "[allow] students to have more control over the design of the learning environment, can help students to feel a sense of involvement and commitment to the class. This kind of involvement is also consistent with establishing a student centered learning environment" (Kessler, 2013: 317).

It is with this appreciation for the way in which the one-CALL classroom can to be organised in keeping with a learner-friendly environment that this learning form was therefore adopted across all the studies.

5.3.4 Gaining entry into the field: The Case Studies

Case Study One:

In a similar vein to that of the Pilot Study, using my network of IT research colleagues at the University of Duisburg, I visited and was referred to an enthusiastic English teacher at another partner school.

Already in response to my first email contact, she shared her interest in learning about ways in which she could use the computer, even though she had not yet used it in teaching:

> *"My experience in using the computer in the classroom has been very limited so far. There are several reasons for this. I have made use of the computer during 'Freiarbeit' [self-directed work], in which students choose which subject they want to work for. I have also had students use the internet for research for several topics that we discussed in class.*
> *I can, however, well imagine to try new things and methods".*

[Excerpt from Case Study One – Email correspondence, English Teacher, 08.03.2004].

With such an open disposition towards learning about ways in which the computer can be used and a willingness to cooperate in a project, this partnership was established quite easily and it was agreed that the year 11 class (average age: 16-17 years) would be an appropriate choice based on the following reasons:

> *"I checked the Curriculum for the second term and what it says on topics. Basically, I have a free choice and was thinking whether it's worthwhile to discuss gender roles, religious or other discrimination or concepts of life.*
>
> *This is what the curriculum says: Sequenzschwerpunkt: Zwischenbilanz im Sprachlernprozess; Bestandsaufnahme zur fortgeschrittenen Auseinander-setzung mit Sach- und Gebrauchstexten sowie poetischen Texten. Presentation skills: Thematisch gebundene Streitgespräche; Vorstellung selbstständig ausgewählter Texte und Materialien usw.*
> *(Focus of the unit: Interim appraisal in the language learning process; continuous assessment of skills of analysis of non-fictional, functional, and fictional texts/poems. Presentation skills: topical debates; presentation of independently selected texts and materials, etc.- Own translation)*

> *I have a couple of texts in mind and some ideas how to tackle the term. It could be something like "Concepts of happiness in the modern society". As there is a focus on presentation skills there should be some way of bringing in the computer. What do you think?"*

[Excerpt from Case Study One – Email correspondence, English Teacher, 15.03.2004].

This suggestion on the part of the teacher fitted quite well with the orientation of the Pilot Study and would allow me to take a closer look at pupils interacting as they worked on developing a presentation for their peers.

This approach to the meaningful use of ICT would, therefore, address the paradox referred to in Section 5.3.2 in that it would take into account the reality of the availability of the resources within the classroom. Since the classrooms were not equipped with computers, it would, however, mean bringing a laptop or a few laptops into the classroom, for example, to combine them with other artefacts already in use, such as the television, the blackboard or any other medium which the teacher and/or the pupils usually used.

Such an approach is supported by Solomon et al. (2003) who, however, caution that "[m]erely having computers scattered throughout classrooms does not ensure that they will be used to their best advantage" (Solomon et al., 2003: xvii). These authors propose that by focusing on higher order skills, teachers can provide opportunities for the meaningful use of ICT. To illustrate this point, they provide examples such as "students working collaboratively to research a topic and create learning materials for their peers. When they explore ideas together, they must explain and defend their reasoning and thus must understand the topic at a much deeper level..." They conclude that "[s]uch experiences empower students as learners and can influence their commitment to learning in the future" (Solomon et al., 2003: xxii).

In this sense, it was clear that the task should be designed in such a way that not only an overall understanding of the learning experience in this particular constellation could be achieved, as was the case in the Pilot Study, but that an opportunity would be created to look more closely at that interaction and the ways in which pupils perceived this process (see Appendix 9).

Case Study Two:

Case Study Two was conducted at a secondary school in my home country, Trinidad and Tobago, the southernmost twin-island state in the English-speaking Caribbean. This context was selected based on the fact that in 2000, I had already conducted research on the extent to which teachers across different secondary school types were using computers in the foreign language classrooms and for which purposes. One of the results of that study (Yearwood, 2004a) was that teachers seemed to be more inclined to explore the possibilities offered by newer technologies in the schools in which the principals had a vision for greater use of ICT and were actively involved in supporting their staff.

Based on having completed research of this nature in this context, I found this to be fertile research terrain for looking at perceptions of interaction in the CALL classroom.

I, therefore, decided to make contact with my alma mater, which was one of the schools involved in the research study mentioned above, as I was aware that such a cooperation would be welcome.

Following two email exchanges, I was able to establish a link with two members of staff with A-level classes (average age: 17-18 years and at an equivalent stage in the secondary school system to the pupils in the year 11 class with whom I had worked in Germany) who were very open and prepared to work along with me. To ensure consistency among the studies which had so far focused on involving pupils in preparing presentations, it was agreed that the pupils would also prepare a presentation, the content of which would be relevant to their preparation for their final exams and which could also give them a chance to reflect on their strategies for approaching exam questions (see Appendix 10).

Case Study Three:

The final case study was carried out once again in Germany at a post-secondary vocational business school, where students (average age: 19-21) were given the opportunity to learn a second and third foreign language (other than English) and where I had begun to work just prior to ending my data collection phase. This presented itself as an excellent opportunity to explore the perspectives of my new students.

Though this study distinguishes itself from the previous ones in the sense that this was my own classroom and the study would take on more of an action research approach by virtue of this fact, this setting was selected on the basis that it would give me another chance to look into the interaction in yet another setting in which basically similar factors, such as the availability of resources and a genuine interest in supporting students in meaningful interaction in the CALL context, were at play. Here I would be able to once again examine the insider perspective on the roles assumed among students and focus on perceptions of the computer in shaping these roles.

As I would be working with my own students, I was cautious to make the study and its purpose transparent and to follow the ethical codes of practice established by the institution for data collection.

Additionally, as this case study would constitute a final replica study, I ensured that the task was also consistent with the task of the previous studies while also staying in line with the syllabus requirements (see Appendix 11).

5.4 Conclusion

This chapter has attempted to provide a transparent understanding of the research agenda particularly in terms of the methods of data collection and data analysis.

This I have linked to the general research goal as well as to the research question which went through some measure of refinement as the research process progressed to ensure that an increasingly closer look at the features surrounding the interaction in the one-CALL classroom was taken. In this connection, I also thought it significant to document how the data are represented since this process, while part of the data analysis, offers a tangible and accessible representation of the research results from which classroom practitioners can benefit.

In revisiting the motivation for carrying out the research, that is, as it relates to the concept of the digital divide or, more specifically, to the classroom divide, I have sought to establish the basis on which the contexts investigated were selected.

In short, this chapter essentially provides a basis for understanding the significance of this research on how the CALL classroom experience can be enhanced in view of the reality of many language classrooms around the world, where the one-to-one ratio of computers to pupils remains an elusive goal.

In the following chapter, I present the results of the Pilot Study, as the first installment in analysing perceptions of interaction in the one-CALL classroom, or what I refer to as one example of a flipped version of the LTE concept.

6 Interpreting interaction in the one-CALL classroom

A presentation and discussion of the research findings of the Pilot Study as they relate to issues inherent in Research Question One and as seen from the AT perspective

6.1 Introduction

This chapter makes an initial contribution to addressing the key issue which gives this work its title, that of perceptions of interaction in the one-CALL context. It reports on the results of the Pilot Study conducted at the beginning of the research process to primarily examine the value of the computer as a complementary artefact in the language classroom and, consequently, the potential of collaborative group work as a suitable learning arrangement in this context.

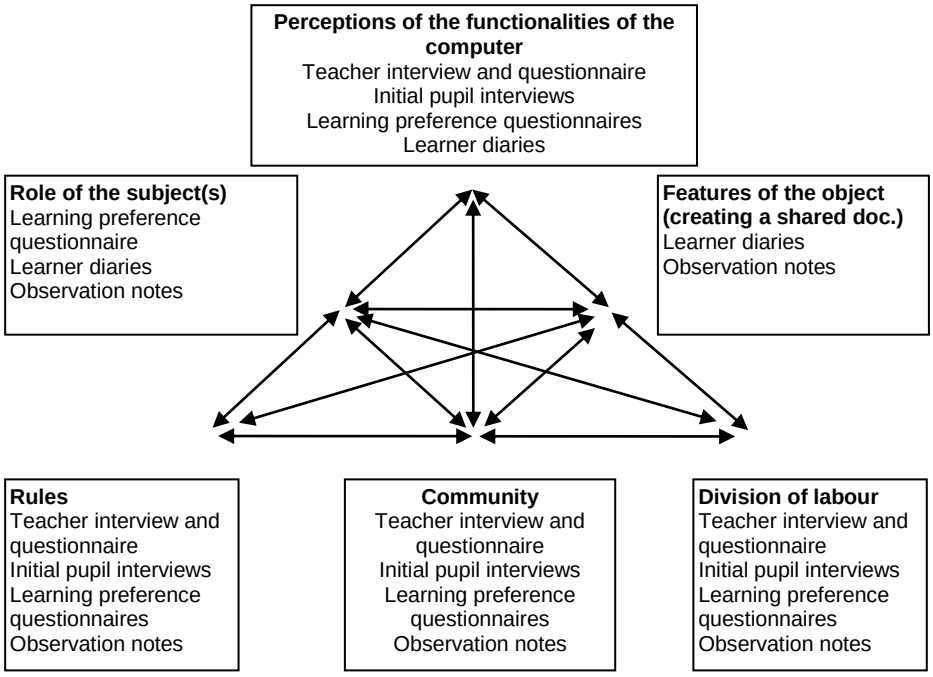
Since the learners themselves are the ones at the centre of the process and can serve as a valuable resource in capturing the classroom experience, I examined their perspectives on the way in which they experienced the learning environment. This would, as a result, provide a basis for identifying the role played by what I have previously referred to as the 'agents' and 'artefacts' making up this specific constellation, or as referred to within this research, this specific AS.

The first section of this chapter, therefore, outlines the features of this one-CALL classroom and provides a rationale for setting up and investigating this scenario.

Following this, and in an attempt to establish a framework for analysing the dynamism of the learning experience in this setting, the learners and the task as well as the nature of the use of the computer as a complementary artefact will be described.

Finally, and based on an analysis of the reflections documented through the various data collection instruments (see Figure 6.1), perceptions regarding the various types and levels of interaction and the interplay taking place between learners and the computer (based on their understanding of the functionalities of the computer), are presented.

Figure 6.1 Overview of data triangulation process leading to the formulation of descriptors of the functionalities of the computer within a one-CALL classroom AS – Pilot Study



6.2 The one-CALL classroom and the issue of improving learning conditions

As alluded to above, the principal focus of the pilot project was to examine the way in which learners interacting collaboratively with the computer experienced this learning context. More specifically, I focused on uncovering the ways in which interaction, as supported by the use of document-editing and presentation software (see Section 6.5), is perceived by learners and how this can be assessed to determine the value of the computer, not necessarily as it leads to "improving language directly, but rather to improve the learning conditions in some fashion" (Hubbard, 2009: 2). This can be seen as an even more precise formulation of Research Question One which suggests two distinct, yet complementary, areas of focus. One is on the computer, or rather the software and its functionalities as representing the media via which the creation of products would be mediated (in this sense, the role of the computer as a tool). The second would, therefore, be on the perception of the interaction, that is, the interplay between learners and the computer as well as among learners themselves (here with the focus on the social role played by the computer within this interaction). Within the framework of AT, these two areas of focus represent the first two levels of the AS (see Section 4.2).

The third level, which is represented by the sociocultural elements of the context or what I have previously referred to as the social structure of the classroom were also brought into focus as the backdrop against which the interaction takes place.

It should be noted that the value of the computer as it relates to improving learning conditions, as cited above, can be determined, in Hubbard's (2009) understanding, by looking at "learning improvement" from a range of perspectives which he outlines as follows:

- "learning efficiency: learners are able to pick up language knowledge or skills faster or with less effort;
- learning effectiveness: learners retain language knowledge or skills longer, make deeper associations and/or learn more of what they need;
- access: learners can get materials or experience interaction that would otherwise be difficult or impossible to get or do;
- convenience: learners can study and practice with equal effectiveness across a wider range of times and places;
- motivation: learners enjoy the language learning process more and thus engage more fully;
- institutional efficiency: learners require less teacher time or fewer or less expensive resources" (Hubbard, 2009: 2).

In accordance with this understanding, this study therefore focused on "learning improvement" as it relates to the way in which learning conditions can be said to better support learner development. In Hubbard's (2009) attempt to broaden the definition of what constitutes "learning improvement" in CALL, he classifies this focus on improving learning conditions as one domain of language learning which warrants exploration. Learner development, as complementary to language development, refers to those significant peripheral yet integrated features of the learning experience, such as access, convenience and motivation, for example, without which language learning could neither be defined nor take place. It is the extent to which these types of significant aspects of the learning experience are supported by the computer within the classroom, as a contributor to collaboration, with which this study is concerned.

At the same time, it is also important to consider these issues, as they provide support for the concept of embedding the computer into practice so that it becomes a normal part of the learning context and in this way can offer learners

more possibilities for improving their learning as its use will impact on language learning on more than one level. The aim, ultimately, of the use of the computer would be to make it 'invisible' or 'normal' in order to explore its potential more fully. In the one-CALL classroom under investigation in the Pilot Study, this potential was investigated by looking at the impact of the computer on the learning context, that is, as defined from the perspective of the learners.

6.3 The one-CALL classroom and the issue of normalisation

The learners in this one-CALL classroom were 26 pupils in the ninth class (the fifth year of a grammar school in the German education system in the state of North Rhein Westphalia) and had been learning English as a Foreign Language (EFL) for at least five years. The teacher of this class acted as a resource person and observer throughout the project, allowing me to take the lead role as a guest teacher-researcher. This meant that I was responsible for the design, management and execution of the lessons which we discussed and exchanged ideas on before and after each session. In this sense, while my role as researcher-observer was made quite clear to the pupils, I also fulfilled the role of a teacher figure alongside their class teacher.

Initially, I attempted to develop a connection with the pupils by the time I began the project and had, therefore, attended classes conducted by the teacher.

Based on the fact that I wanted the pupils to be comfortable with the computer and see its presence as 'normal' (as indicated above and as suggested by Bax (2003 and 2011a) and Chambers and Bax (2006), I myself used the laptop, which I had acquired on loan from my university for the purpose of carrying out the research, for each of the lessons I taught and made it available to the pupils during each lesson to enable them to work with the document-editing and presentation software at their own pace. The choice of one computer was a conscious decision as it offered pupils the chance to use the computer as a complement to the other artefacts within the classroom which they were used to (like books, worksheets, etc.) and which they indicated in the learning preference questionnaire they were comfortable using. This was the case for the full duration of the study which officially ran for three months (from May 2003 to July 2003), the time which was allotted to the project based on the teacher's half-year plan.

Furthermore, to increase the chances of the computer becoming a somewhat natural part of the classroom structure, the laptop was attached to a portable

digital projector for presentation in the lessons I visited just before beginning the study. I used the media both to demonstrate the use of the document-editing and presentation software which pupils would be using as well as to introduce the topic we would be dealing with. In this way, it was intended that they would begin the process of getting used to seeing the computer used for presentations and eventually become familiar with it being a part of the setting.

It should be noted that while the school had a standard computer laboratory as well as a so-called high-technology computer laboratory, in informal exchanges with some language teachers, it was expressed that despite its possible value, using the computer within this setting demanded a lot of time and organisation and that its success was basically dependent on the willingness and skills of the pupils. Based on this general point of view, it could be argued that this one-CALL arrangement would offer teachers in this context an alternative and more integrated option for using the computer with their pupils. As previously hinted at, this would give the pupils the flexibility to move between pen and paper-based activities, discussion and work *at* and *around* the computer. This would also give them the freedom to decide and coordinate how and when to engage with each other as well as with these different artefacts, including the computer, during different phases of work. Such freedom would thereby create a new dynamic for the non-networked classroom. In other words, this setting was organised to represent a flipped version of the LTE in which one computer is integrated into the classroom in a normal way to facilitate greater flexibility and variety in the learning experience by increasing its potential to support interaction.

In a similar vein, based on their case study research on resolving internal contradictions within ASs in which ICT is integrated, Lim and Hang (2003) suggest that by situating the computer in the classroom, “there might be more seemless transition between ICT-mediated and non ICT mediated activities...[and that]...[s]uch a redefinition of rules might address the piecemeal approach toward the use of ICT...” (Lim & Hang, 2003: 61).

In accordance with this view, it can be said that this flexibility in being able to move between activities also meant that pupils were involved in different levels and types of interaction with the artefacts and with each other in the classroom. The perspectives of the pupils on how they experienced these interactions, which are analysed later on in the ensuing discussion, indicate the extent to which the use of

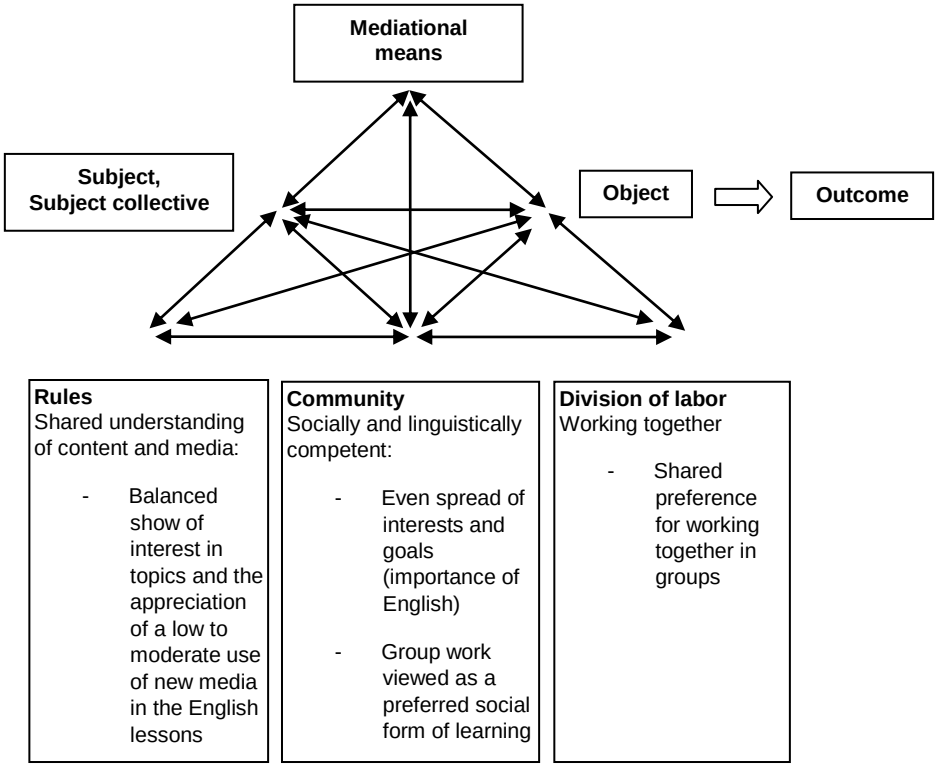
the computer can be considered effective in improving learning conditions by contributing to a somewhat dynamic context for interaction. As will be evidenced later on, the computer did lose its novelty and became an integrated resource among other artefacts in the classroom which, according to the pupils, facilitated their presentation and exchange of ideas.

6.4 Organising the learning experience in the Pilot Study

It should be noted that the manner in which the pupils would be engaged with the various artefacts in this study was not prescribed in absolute terms. This means that there was no directive, for example, for each pupil to complete a selected number of minutes at the computer, during a specified number of lessons. The objective of the use of the computer was, therefore, to meaningfully support pupils, as they conceptualised the way in which they would structure their ideas for a presentation, as they shared this process and eventually as they presented their ideas to the group. As Lim and Hang (2003) put it, the aim was to "shape its [the computer's] use through the organisation of the activities to support and be supported by its opportunities" (Lim & Hang, 2003: 62).

Group work was therefore selected as the social learning form for the project since it would not only accommodate a loose classroom arrangement with pupils also having the option of deciding with whom they would work and how they would divide and schedule the workload for the duration of the project, but, as the pupils themselves indicated, it was among their preferred forms of learning. Figure 6.2 offers an overview of how group work as perceived by the pupils represents an integral part of the social structure of the class.

Figure 6.2 Overview of the social structure of the classroom as represented at Level Three of the AS – Pilot Study



(See Appendix 12 for samples of Learning Preference questionnaires)

Once they had decided on their groups during the first session of the project, table groups were formed to allow them to work in a suitable seating arrangement to facilitate their group interaction during the various phases of the CALL task (see Table 12).

Table 12 Overview of project phases, associated tasks and areas of research focus – Pilot Study

Phases/Session	Pedagogical objective	Research objective	Interactional focus	Mediational means
Pre-project visits (4 sessions)	Pupils engage in tasks related to grammar and literature with their class teacher	Pupils become familiar with the researcher and the research objective through informal	Pupils engage with the teacher and their classmates to address the relevant topics	Oral exchange and written exercises (Laptop, digital projector and mindmapping and presentation software in

		conversation and a formal introductory session		introductory session)
Pilot Study 1 Gathering information	Pupils reactivate their knowledge about the English-speaking countries they know and select information from an oral presentation on Trinidad and Tobago	Pupils become familiar with the topic which will serve as the basis for their task and with the use of worksheets	Pupils ask and answer questions about the topic presented by the researcher	L1/L2 World map Worksheets – General facts
2 Selecting key ideas	Pupils select main ideas and begin brainstorming about how they can develop related ideas	Pupils begin to use the computer along with their worksheets	Pupils work together in groups to brainstorm and begin documenting their ideas on paper and/or on the computer	L1/L2 Laptop and digital projector Mindmapping and presentation software (with the option of using the tablet and pen) Worksheets – Discovering Trinidad and Tobago
3 Writing a topic sentence	Pupils practise writing a topic sentence based on specified criteria	Pupils continue to use the computer along with their worksheets	Pupils work individually and in groups to formulate and document their topic sentence on paper and produce a final version on the computer	L1/L2 Laptop and digital projector Mindmapping and presentation software (with the option of using the tablet and pen) Worksheets – Writing a topic sentence
4 Structuring ideas	Pupils discuss and note down how they plan to eliminate, substitute, combine and chronologically	Pupils continue to use the computer along with their worksheets	Pupils work together in groups to structure the ideas on paper and/or on the computer	L1/L2 Laptop and digital projector Mindmapping and presentation software (with the option of

	organise their ideas		Some groups share their results with the whole class	using the tablet and pen) Worksheets – Structuring our ideas
5 Making a plan	Pupils write a plan for the presentation indicating the main idea and formulating further topic sentences	Pupils continue to use the computer along with their worksheets	Pupils work together in groups to formulate the main ideas and topic sentences on paper and/or on the computer Some groups share their results with the whole class	L1/L2 Laptop and digital projector Mindmapping and presentation software (with the option of using the tablet and pen) Worksheets – Making a plan
6 Writing the introduction	Pupils practise writing an introduction	Pupils work with their worksheets	Pupils work individually to practise writing an introduction	L2 Worksheets – Writing the introduction
7/8 Evaluating the presentation	Pupils evaluate their text using a checklist (worksheet)	Pupils work with their worksheets	Pupils work together in groups to evaluate their text on paper	Worksheets – Evaluating the presentation
8/9 Presenting the plan	Pupils use a mindmap created with the mindmapping software to orally outline the steps (process) in preparing a structured text	Pupils work with the computer	Pupils work together in groups to present the plan of their texts on the computer	L2 Laptop and digital projector Mindmapping and presentation software
10 Writing the conclusion	Pupils practise writing a conclusion	Pupils work with their worksheets	Pupils work individually to practice writing an introduction	L2 Worksheets – Writing the conclusion

11/12 The oral delivery of the presentation and submission of written texts	Pupils deliver a structured oral presentation of their topic	Pupils work with the computer	Pupils work together in groups to present their topics orally. They also submit a printed version of their text	L2 Laptop and digital projector Mindmapping and presentation software

6.5 Defining the CALL task

During the first session, pupils were given a description of the task on which they would work for the ensuing weeks. As learning about different cultures within the English-speaking world was one area of focus in the syllabus and pupils in the ninth class are supported in developing their presentation and writing skills, the task was designed to address each of these objectives to some degree. The overarching aim was, therefore, for pupils to work in groups to discover and gather information about a select country in the English-speaking Caribbean which they would organise in a clearly structured format to be able to present it to the entire group at the end of the project. In order to represent their information in a suitably structured manner, the classroom time was spent in supporting pupils in structuring their delivery.

After some discussion on how pupils can best be supported to organise their delivery, the teacher and I decided on adopting the principles of process writing. This decision was made based on the fact that pupils are required to be trained in organising and structuring texts both as oral and written products and this would therefore provide a good basis for helping them achieve the goal of delivering a well-structured oral presentation while at the same time providing preliminary support for developing their structured writing skills which they would concentrate on even more during a subsequent school year.

In order to record the various phases of this process and share their application of the principles of process writing within the larger group, pupils would have the opportunity to make use of a variety of artefacts in the classroom. In this way, they would not only be able to record the interim stages of their reflection as a group, but they would also be able to share this with classmates from other groups, and

thereby practise the principles involved in organising oral and written work through interim presentations.

After an introduction along with some revision and/or practice of one of the phases involved in process writing at the beginning of each session, pupils would then be given a chance to work on organising their information using paper-based worksheets to jot down ideas discussed (see Appendix 13) as well as the computer to create documents using the software provided in order to record their reflections which they would eventually present to the group. In the later sessions, they could also use the class time to prepare their visual aids, though generally the focus of the in-class sessions was placed on getting students to think, document and share together to facilitate the conceptualisation and structuring of the ideas which they would eventually present.

The document-editing and presentation software made available to the students, known as FreeStyler, was developed by a team of IT researchers at the University of Duisburg-Essen, and according to Paavola et al. (2002), supports the pedagogical principles of Computer-Supported Collaborative Learning (CSCL) in which "...computer applications can scaffold and implement advanced socio-cognitive processes for knowledge sharing and building" (Paavola et al., 2002: 24). Hoppe and Plötzner (1999) detail four specific cognitive processes in which students can be supported as they work with this software:

"1. Coordinating individual input in a shared workspace,

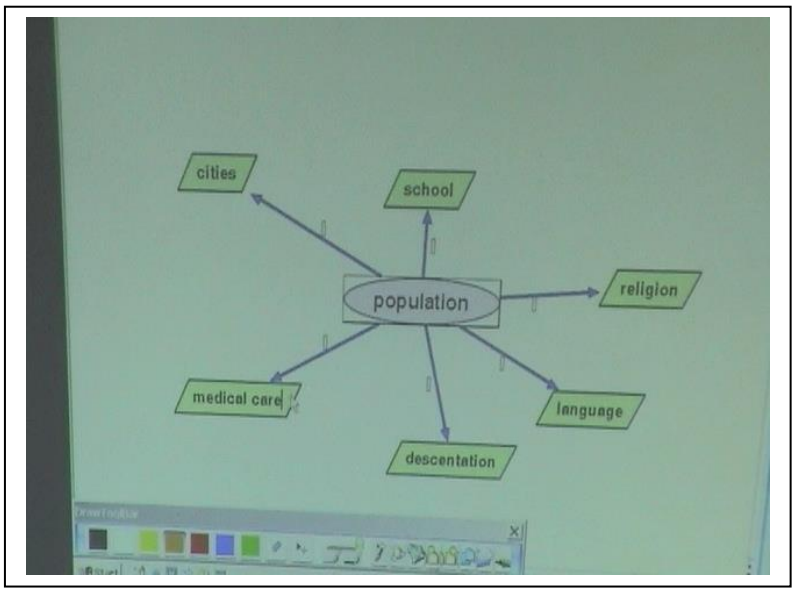
2. Concretizing input into manageable objects,

3. Linking individual input by means of visual representations, and

4. Reusing group products (e.g., for reflection)" (cited in Yearwood, 2004b, 107).

This software, through its design, allowed for the creation of visual objects, or nodes, each of which, based on its colour and shape, was intended to capture a specific type of information. These objects can be seen in very much the same way that flowchart symbols are associated with containing a specific type of information. So, for example, in structuring their thoughts pupils would use the pink oval nodes to represent central ideas and green quadrilateral nodes to represent connecting ideas (see Photo 1).

Photo 1 Example of a mindmap created by pupils using the FreeStyler software



The general objective of the software and the documents created as a result, as expressed by Baloian et al. (2002) and Hoppe and Gassner (2002), was to allow for the capture and reusability of thought processes in the preparation, presentation and concluding phases of collaborative group work (see Photos 2, 3 and 4).

The final product to culminate their task would therefore be an oral group presentation, supported by a visual aid in which the pupils would demonstrate their ability to organise and deliver information on the culture of an English-speaking country in a clear and structured manner.

Throughout the project, therefore, the opportunities created for interaction as pupils engaged with the various artefacts – and more specifically, with the computer as a complementary artefact among other traditional artefacts available to them – would be under investigation.

Photo 2 Example of a mindmap reflecting changes and new ideas

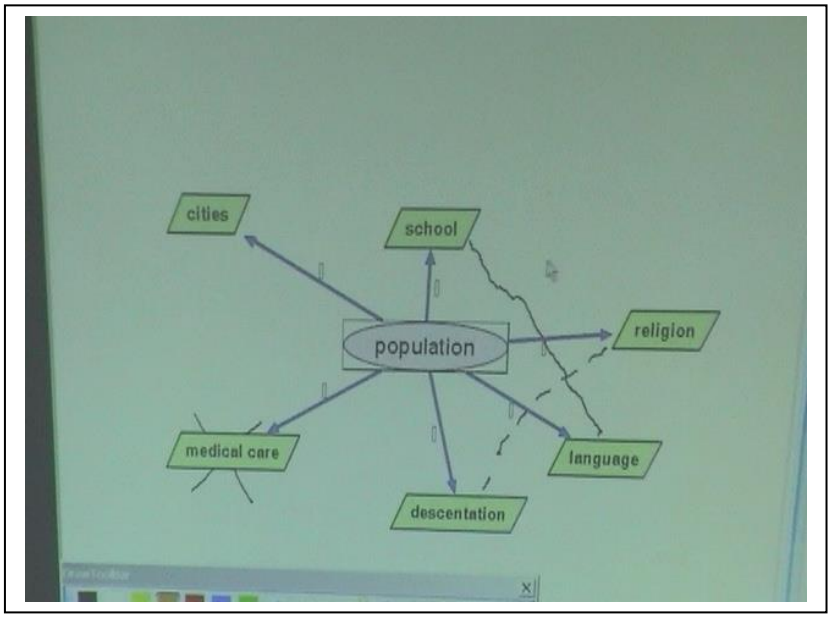


Photo 3 Example of a mindmap reflecting connections and the ordering of ideas

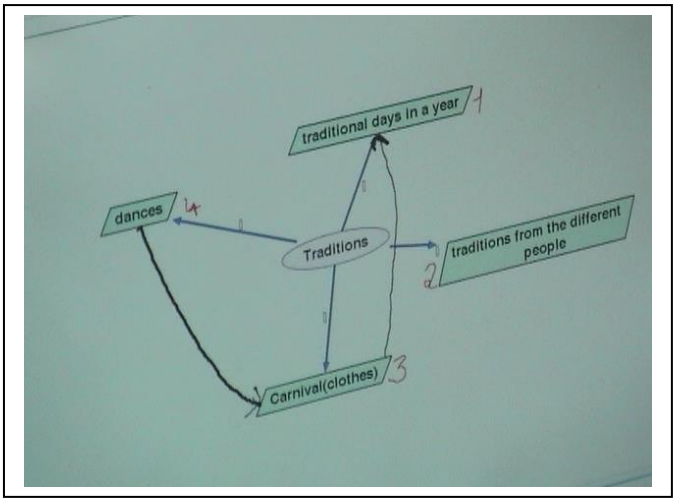
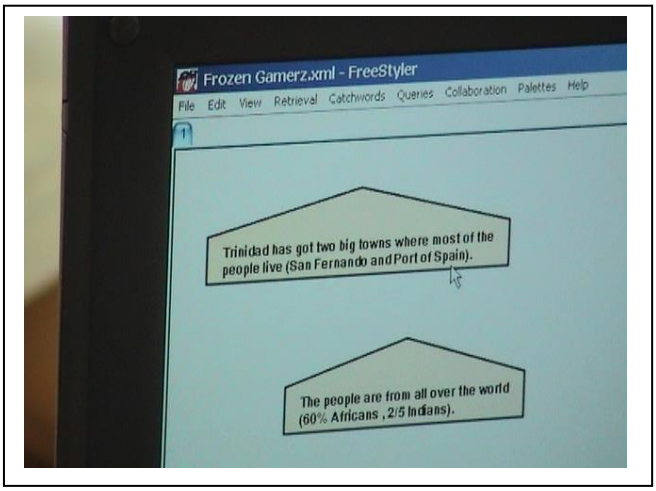


Photo 4 Example of a mindmap showing topic sentences



6.6 Defining the AS of the Pilot Study

In order to be able to put the findings obtained concerning the opportunities created for interaction into a meaningful context, the features of the Pilot Study which make up its AS (based on Engeström's (1999) model) will first be identified. This will provide the backdrop against which the data can be analysed to then draw conclusions on the ways in which the conditions for learning are improved through the interplay of the various 'agents' and 'artefacts' within this classroom setting.

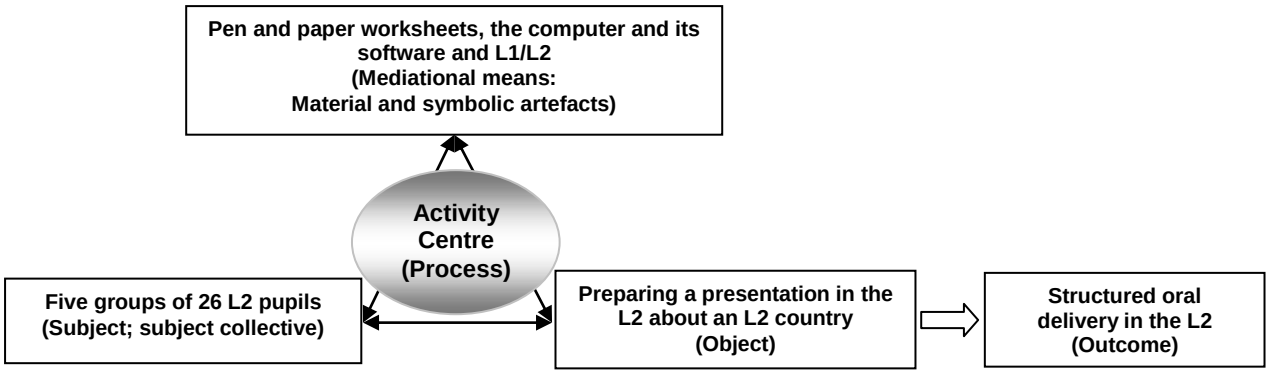
According to Engeström's (1999) graphic representation of an AS (see Section 4.2), the key elements of the system are the subjects, the artefacts and tools, and the object, all interacting together to 'produce' an outcome (for example, the learning outcome of delivering a well-organised oral presentation in English). These elements are considered to be operating at the classroom level (Müller-Hartmann & Schocker-v. Ditfurth, 2010) and this interplay is further impacted on at a deeper level, by the community, the rules and the division of labour at work, firstly within the classroom context itself and even within the more largely defined AS of the school context and perhaps beyond.

Though this study does not seek to underestimate the influence of these latter factors operating at this third level of the AS, within the confines of the data collected, these were not explored to a significant degree as the research parameters even at this level were restricted to the classroom unit.

As previously stated, at the classroom level represented in the Pilot Study, the subjects worked in five groups. The tools they used included worksheets and the

computer with its corresponding software. The activity can be described as the process of working on the object of preparing an oral presentation and a visual aid to demonstrate their ability to deliver a topic orally in a structured manner in English (see Figure 6.3).

Figure 6.3 The Pilot Study classroom at Levels One and Two of the AS defining the AC as the point at which the process of interaction is located



In Figure 6.3, one graphic element which does not appear in Engeström's (1999) model, the AC, is highlighted. This spotlight is represented here to identify the central focus of this research which, as previously indicated, is based on the perceptions of the participants themselves on the focus and levels of the interaction in which they engaged.

This intersection in the model is representative of one of the locations which Lim and Hang (2003) seem to be referring to as "the major loci among which human cognition is distributed in the learning environment" (Lim & Hang, 2003: 51), involving the computer in some mediational capacity.

This also relates closely to the concept of "activity" defined by Gánen Gutiérrez (2006), based on Coughlan and Duff (1994), as being "the unique event defined by the processes that develop as a result of the learners' interaction with a task in combination with the learners' own goals and perceptions of that task" (Gánen Gutiérrez, 2006: 230).

The perceptions provided by the participants were, therefore, intended to contribute to an understanding of the ways in which interaction is operationalised when supported by the computer in what can be described as a 'normal' classroom.

The results would, thus, indicate the extent to which, based on the research design, this is made visible and, consequently, the ways in which interaction can be said to have been facilitated or mediated by the artefacts made available.

6.7 Pupils' understandings of the one-CALL classroom AS

As previously mentioned, the main source used to provide data to respond to the question of how students interpreted the ways in which they were supported in their collaboration task was the pro-forma learner diaries they were required to complete throughout the study. The questions posed sought mainly to obtain their perceptions on an on-going basis of their engagement with each other and with the computer and as illustrated above, at the AC.

In order to be able to get their impressions of how they perceived the learning experience in general in this constellation, the first question posed in the learner diaries asked pupils to indicate what they learned in the specific lesson. They were also explicitly told that they should relate this to any aspect of their learning experience. The ensuing questions focused on how they experienced the learning event with the media as well as within the social form in which the lessons were organised.

Their responses show that they were able to identify their learning as constituting not simply the gathering of knowledge - which did in fact constitute the majority of responses, but more notably, the development of skills which supported them in the completion of the task (See Table 13).

Table 13 Classification of pupil responses on how they perceived the learning experience during the lessons

Learning as gathering knowledge		
Obtaining new information and facts		**Observation**
Learner and content	"**A little bit about** the history of Trinidad and Tobago…" "…We got a lot of **informations** about the location, population, music etc." "We learnt **something about** two Island in the middle of Amerika" "I've learned **a lot of facts about** Tobago & Trinidad, e.g. about the location, government, music and food"	40/72 of the entries in which students indicated that they had learnt something new

Learning as a mediated process		
Using the media		**Observation**
Learner and media	"I learn **to use the computer in a new way**." "We learnt **how to work with a computer program**." "I learned **to work with the computer-program**, we use for mind-maps and we exchanged our ideas on our topic, in our group." "I think the only thing was, **how to work on a computer**, because I didn't know this program before." "I learned **how to create a "memory map"** with the computer…"	12/72 of the entries in which students indicated that they had learnt something new
Discovering skills to support the completion of the task		**Observation**
Learner and learner and creating a joint product	"We learnt **to make topic sentences** of different paragraphs" "We learnt today **to order our topic sentence**"	16/72 of the entries in which students indicated that they had learnt something new. 5 indicated specifically that they had learnt about

within a social context	"Yes,…our classmates presented us her topic sentences and there were many new informations in it. Also we learned **to tell our classmades** something about our topic in English" "Yes, I learned **to present our ideas to the class**" "I learned **to make a concept for a essay**"	presenting their ideas
Working together in groups		**Observation**
Learner and Learner	"I learned today again, that **I feel comfortable to work in groups**" "I learned **to work in groups in a better way**" "Yes, I learn **to work in groups in the lesson**." "Yes, I learned **how to organise a project in a group of six people**."	4/72 of the entries in which students indicated that they had learnt something new

(See Appendix 14 for sample of Learner diaries – Pilot Study)

In initially capturing pupils' impressions of how they experienced the learning constellation, it became apparent that the learning taking place was not just viewed as taking place at the level of content. Rather, it can also be argued that at the heart of the AC there was engagement that promoted the development of skills, as cited above. This was reassuring in the sense that it indicated the depth of thought expressed by the pupils as they considered their experience. It also demonstrated their perception on computers in two capacities. One as a tool mediating the creation, organisation and delivery of products and two, as facilitating collaboration (in the sense of shared thinking) and the development of skills.

The following sub-sections, therefore, offer an elaboration, based on the perceptions of pupils, of the levels of interaction taking place at the AC and how what I term the 'agents' and 'artefacts' seem to inter-relate.

6.7.1 Perceptions of interaction *with* and *around* the computer

One category of interaction which can be identified as taking place within the AC is the mutual support generated "with" and "around" the computer as pupils worked together to produce a joint document which would then be shared later on with their classmates. This was made evident in pupils' responses to the more direct question of how they felt working in their groups. Responses gathered on the question of whether they felt comfortable working with their classmates also clearly indicated the existence of a generally positive social support network within the group as they worked together on their document:
Such responses were articulated as follows:

> *"We helped each other with the computer"*
> *"...I really had a lot of fun making this "mind map" together with my group member F."*

[Excerpt from Pilot Study – Learner diaries].

While it can be argued that a positive social setting can be engendered in any group constellation in which pupils feel comfortable, what is further evident here is the relationship between the socialising within the group and its specific relation to the way it was mediated by the computer.
The support they offered each other "with" and "around" the computer, as hinted at in the above excerpts, suggests further that within the AC there was also interaction taking place which was specifically linked to completing a joint document at the computer.

6.7.2 Perceptions of interaction as knowledge sharing

In addition to the internal group support pupils reported experiencing, it was also clear that the opportunity provided to extend their knowledge to the whole group, by sharing their interim presentations and receiving feedback was another level on which interaction was facilitated via the computer. It should be noted here, that it is in this respect that the computer distinguishes itself from the other material artefacts in use within the classroom. While students did make use of the worksheets and used them to jot down some of their ideas, they did not seem to generally constitute a shared product in the way in which the saved electronic

documents did. These latter were used for recall and for re-presentation and were seen as an in- and whole group endeavour, as evidenced by pupils' responses to the question of the ways in which the computer was seen as useful:

"It's interesting to know what topics the classmates chosen"
"We learned something about the other groups"
"…I have seen what the others have choosen (topics)"
"You can show much things with the computer"
"One group showed us their presentation order"
"We can show the classmates our paragraph"
"It is easy for the class to follow what M. and T. did in their presentations."
"It was much easier to follow"

[Excerpts from Pilot Study – Learner diaries].

These responses can be said to provide a starting point for appreciating the specific way in which the pupils can be engaged in shared thinking. By having to present their ideas as they developed, pupils were also compelled to reflect together in the group on the way in which they were structuring their thoughts and then present them so that their classmates could follow.

6.7.3 Perceptions of interaction and the mediational function of the computer

A further perception of interaction which is strongly tied to the potential mediational role of the computer can be seen in the specific functionalities offered by the software.

Pupils identified the functionalities making the computer useful as being related to the capture of images and text (visualising), storage and recall (recording), the facility available for creating and recreating ideas and concepts (supporting conceptualisation), adjusting (allowing for manoeuvrability) and finally the presentation (medium for sharing). This was identifiable in further responses to the way in which the computer was used and seen to be useful, like the following:

Visualising

*"Today we've **made a diagramm** (or so) for our group"*

*"We learned to **make a mind map** at the computer"*

*"We **made our own mind map** on PC"*

Supporting conceptualisation

*"I learnt how to use a mind map and how to be **creative with my catch words**"*

*"I use the computer to **write texts usually, but today I could make a mindmap**"*

*"We **put our ideas in the computer...before that project, I only play games** with the computer"*

Recording

*"We **saved our new decisions**. So that's good"*

*"It is better if you can show all classmates your topic on the PC, because you can **remember it better**"*

*"We saved our changes so **they can't get lost**"*

*"We **collected our ideas** on the PC"*

Allowing for manoeuvrability

*"We could **change some things** in our presentation order"*

*"We could **sort our ideas in a "graphic-way"** (mind-map)"*

*"It helped us to **order our titles**, so that was good"*

Being a medium for sharing

*"I learned to use the program and **show our ideas**"*

*"The other groups showed us what they have…the other groups **presented us their work with it**"*

*"I learned to use the program and **show our ideas**"*

*"You can **show something better** as on the board"*

*"It was **easier to understand** and a mind map on the computer is better than on the board"*

*"It's **more interesting as on the board**"*

[Excerpts from Pilot Study – Learner diaries].

These functionalities identified by pupils again hint toward another level of interaction within the AC of the classroom as they all related to the way in which pupils will have engaged meaningfully with the computer as an artefact and at the same time with each other (as evidenced, for example, by the use of the communal “we” in most cases). What seems to be worthy of attention here is the way in which pupils articulated their use of and the value they placed on the computer as an artefact – that is, not simply as passively being worked upon, but as Lantolf and Thorne (2006) suggest, symbolically as supporting a more meaningful extention of human capacity. This use of the computer can certainly be said to represent its social function, if this is understood to mean that it offers a means of bringing together and transforming thoughts and concepts into further artefacts – (see Section 2.2.2 for a proposed definition of the social function of the computer). It is by applying this definition of the computer in its social function to the perspectives expressed, that the value of the computer can, therefore, be further assessed to determine its contribution to improving the learning conditions of the particular context under investigation. In a similar sense to the way in which Hubbard (2009) defines learning effectiveness, in this context, learners can be said to be experiencing just that. In this sense, they are offered artefacts which help them develop presentation skills, on the one hand, through the facilities offered by the technology, and, on the other hand, they develop reflective skills through the interaction facilitated with each other in producing a joint product for a specific audience. This dual value which can be described as material (computer as tool) and at the same time symbolic (computer in its social function) is summarized in Table 14.

Table 14 Functionalities of the computer which support the concept of the computer both as a tool and in its social function

Students are enabled by the computer to:	Computer as tool	Computer in its social function
	Shapes the way we interact with material objects by facilitating:	Shapes the way we interact with each other by facilitating:
Visualise thoughts and concepts	...the graphic representation of ideas	...the communication of thoughts and concepts using multisensory functions
Conceptualise	...the unified representation of concepts through the use of forms and symbols	...the external representation of shared and co-constructed understandings
Record	...the storage of objects for retrieval	...the capture of shared and co-constructed products
Manoeuvre objects	...the representation of relationships between objects and changes occurring	...the demonstration of the process of thought and development in arriving at products
Share knowledge	...the display of information	...the exchange of information and ideas

In this illustration, we see a clearer link between the perceptions of the pupils in terms of their interaction with the computer as an artefact and the concept of the computer in its social function. As alluded to earlier, the computer's role within the AS and more specifically at the AC needs to be distinctive if it is to be viewed as broadening the experience of learners within the classroom and as creating authentic opportunities for interaction, for example. In other words, it can be seen that even within the non-networked one-CALL classroom, the computer facilitates pupils' communication (both in terms of product and process) as they share (thoughts), co-construct (products) and develop (understandings). In this way, the computer creates space for the exchange of information and ideas.

The interaction within the group was also further viewed by the pupils as having had a positive effect on the learning atmosphere within the classroom which can be linked to the issue of motivation, as defined by Hubbard (2009).

Most pupils articulated this positive effect in their learner diary in various ways:

"It's easier to work with other pupils than alone"
"You have more fun working in groups than alone"
"We helped each other with the computer"
"I felt comfortable because we worked good together"
"We learn better together"
"…We was together at the PC"
"We could exchange our ideas and worked together"
"It helps if I don't understand…my classmates help me"

[Excerpts from Pilot Study – Learner diaries].

6.7.4 A 'normal' lesson – as perceived by pupils

As indicated above, the computer's social function in facilitating interaction as well as the pupils' valuing of this interaction were the key issues coming out of their overall perceptions of the interaction they experienced in this specific one-CALL constellation. Another important element of this context which warrants some attention is the way in which they viewed the role of the computer in relation to other artefacts within the classroom. In their learner diaries, over time, pupils began responding to questions like "what word would you use to describe today's lesson" or "do you think you are learning to use the computer in a new way" by using the term 'normal'. Here it can be argued that, within the classroom, the computer began to take on a "'normal' value to its users as part of the teaching and learning process" (Bax, 2011a: 1). This was emphasised by the fact that pupils began identifying the computer as an integrated part of the group work process, as facilitating a specific function or as one option among other artefacts:

"I think the lesson today ***was like a normal lesson*** *where we work with our classmates together"*
"We tell the class about our presentation and there we are learning and ***we choose the computer****"*
"Working with the computer in this specifically way, ***we did in other school lessons too****"*

*"A **normal school lesson**…it was good to have the computer, because it was easier to show something."*

*"It was **normal school lesson**…If you work with the computer, you can put it ahead a better way"*

*"'**Normal**', because we did the same, than the last lesson…we did our presentation with it"*

*"We work in a specific way and **use the computer too**"*

*"Now I know that **we can work with the PC and without it**! A work needn't only [one] thing. **We can combine it**!"*

*"We can work **with the computer <u>and</u> with the group** very good"* (Underscore in original script).

[Excerpts from Pilot Study – Learner diaries].

Despite pupils' perception of the way in which the computer had taken up a normal place in the classroom, there were also divided views on whether the computer should play a larger role. While a few entries (7) suggested that there should be more use of the computer, one pupil expressed the desire to work with more worksheets. Additionally, while two pupils noted that the class could go into the computer room, so everyone can use a computer, one pupil lamented the fact that the computer room is not always free.

A similar divergence was noticeable in the initial interview with the two pupils who agreed to meet with me to discuss their views on the use of the computer in the classroom prior to the start of the project.

On the one hand, there was the perspective expressed that the computer should not become a replacement for other agents (teachers) and artefacts (the blackboard) as these latter have their value:

Interviewer: Do you think using the computer in the classroom can be useful?

Stud. A: I…yes, but I don't think it can replace the blackboard or something like that, because it is very important to have it. ((Gentle laughter))…because you have to see *ähm* what is written and you have to have someone who explains…who'll explain it to you. That's important.

On the other hand, the other pupil expressed the view that computers should play a far more significant role in classrooms:

Interviewer: How about the way you learn English in class? The way you learn it, the kinds of materials you use to learn it? You mentioned that you use books and sometimes computers. Do you think that was a good way of learning English? And is it helpful to you?

Student B: Yes, I think things like “The Hobbit” are very helpful, because I think you would like to read English texts and …, but I don’t think we use the computer enough.

Interviewer: Oh you think we don’t use the computer enough. So you would like to use the computer in class?

Student B: I think we can replace everything with the computer.

Interviewer: Ok. So what kinds of things do you think we can do with the computer in the classroom?

Student B: I think the blackboard, which she mentioned [*referring to classmate sitting on the other side of the table who had just been asked the same question*], I think you can replace it because today with the, today computer technique, you can do everything. You can show complete …everything on a beamer, beamer and I think you can do everything with a computer and we should *ähm* do more at school with the computer…

[Excerpts from Pilot Study – Initial pupil interview].

Implicit in these views, though expressed from differing perspectives, is the idea that the computer should be integrated into the classroom in a way that complements already existing agents and artefacts, like teachers and the blackboard in the first view and books “The Hobbit” in the second view.

Even though these comments express very individual and somewhat divergent views, they do provide hints of the way pupils understand and value the role of the computer as a complementary artefact.

6.8 Conclusion and projections

The Pilot Study aimed to respond to the question of the ways interaction, as supported by the use of document-editing and presentation software, is perceived

by learners and how this interaction can be seen to be advantageous to their learning.

Using a pro-forma learner diary to get an insight into pupils' perspectives of this interaction, I was able to draw conclusions on how they seemed to be benefitting from the experience.

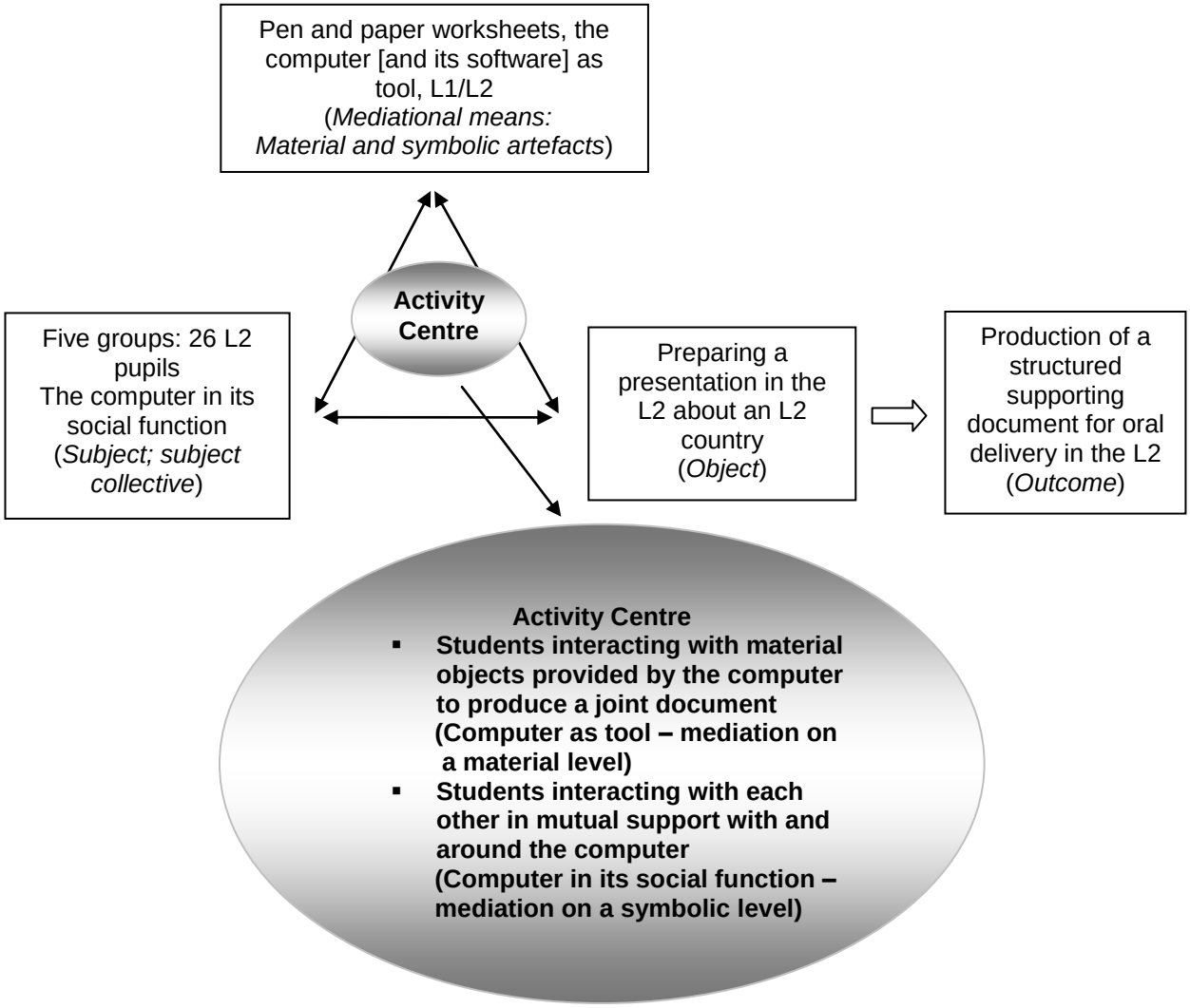
Firstly, learners perceived the interaction *with* and *around* the computer as fostering mutual support within the group as they worked on a single document and even among groups within the classroom.

Despite looking at this mutual support as being an indication that the learning conditions were enhanced as more opportunity was created for learners to support each other, it can be questioned whether this can necessarily be ascribed to features offered by the computer per se. In this context, I argue that the focus here is less on the architectural features of the tool, but more on the "human to human" knowledge sharing which, based on the perspectives of the pupils, featured prominently in this context. In other words, pupils seemed to value the resulting interaction as they engaged in a joint task around the computer.

Secondly, students perceived the computer as facilitating greater knowledge sharing as they were able to share even developing ideas with their classmates.

It is based on these perceptions that a clearer understanding of the interplay between agents (the pupils [among themselves and] with the computer in its social function) and artefacts (the computer as tool) can be arrived at. Placed within the framework of AT, therefore, these understandings of the interaction occurring in the one-CALL classroom can be identified as having a significant role in helping learners to work on the object of the activity in order to accomplish the intended outcome. An "enlargened" view of the AS of this one-CALL classroom, as illustrated in Figure 6.4 demonstrates how this role can be better understood.

Figure 6.4 The AS of the one-CALL classroom as defined in the Pilot Study based on Engeström's model amplifying the interaction at the AC



The concept elaborated here is that the computer in the traditional sense as tool can be complemented by the concept of the computer in its social function. In this context, the computer's particular functionalities as a tool provide the basis for the type of interaction which can be said to improve conditions for learning even on a social level. This improvement can be interpreted from the perspective suggested by Hubbard (2009) of the computer facilitating convenience and motivation for knowledge sharing, for example. It is in the context of this complementary role of the computer, that is, facilitating the creation of joint products and at the same time the sharing of knowledge, that pupils seemed to be suggesting that the computer was becoming just one of the options available to them or, at least, that it was losing its novelty status.

In addition to these conclusions, two other significant issues, in terms of the research design also arose. These issues would help to advance the research focus in the main case studies. One of these issues was the capture of the interaction occurring among learners. Despite the fact that the studies do not explicitly seek to examine specific aspects of language acquisition possibly occurring in the interaction, but rather the advantage for improving conditions for learning as discussed earlier in this chapter, by recording the interaction a clearer picture of the specific way in which pupils can be said to be interacting with the artefacts and with each other could be achieved. In other words, and as Chambers and Bax (2006) put it, to arrive at a state of normalisation, "not only do we need to consider each relevant factor [social, human and issues related to equipment], but ... we need a better understanding of how exactly all of these factors interact and operate in real pedagogical contexts" (Chambers & Bax, 2006: 466-467).

It is for this reason that video protocols were kept of the interaction throughout the main studies. This would make it possible to more closely observe the interaction taking place among agents and artefacts. According to DuFon (2002), by observing what she terms "whole events", one can "determine the structure and organization of the event" (DuFon, 2002: 46). In this way, video-recording would be used to have a closer look at the way in which the interaction between 'agents' and 'artefacts' was structured and organised.

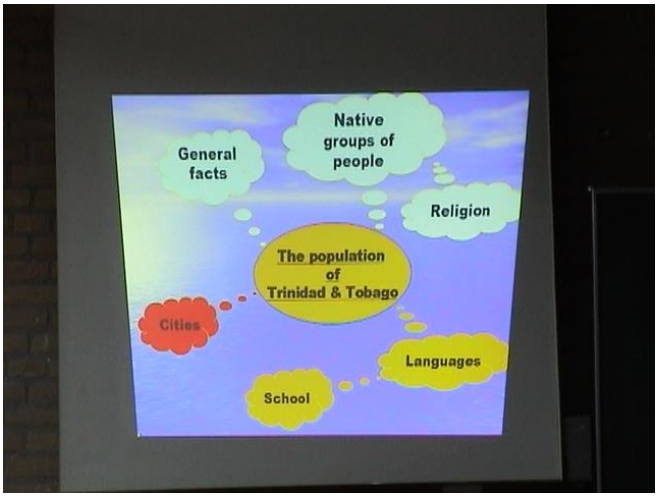
The other issue concerned the selection of the software to support students in creating joint products. While FreeStyler can be said to have particular functionalities which facilitate the documentation of ongoing thought processes which can also be used as visual support during interim and final presentations, this software is not readily available to classroom teachers. The software, at the time of the project, was still in its refinement stage. Based on this and on the fact that pupils highlighted the potential for joint creation and knowledge sharing as the key levels on which interaction took place, in the following studies, pupils were given the opportunity to work with commercial software, that is, Microsoft PowerPoint, which bear similar features. This decision was also made on the basis that, fundamentally, the same aim of integrating the computer as a normal part of the classroom context could also be arrived at as this software is easily available on the market. In seeking further partners with whom I could team up who met the criteria of having an interest in the use of the computer in their foreign language

classroom and who would be willing to engage their students in working with the computer for part of the school year, it also became obvious that PowerPoint was already familiar to some degree to most teachers and pupils, though they may not have used them for pedagogical purposes.

This level of familiarity would neither advantage nor disadvantage any pupil in the main studies as all would be given an overview of its use and would then be given a choice to decide whether they wanted to work with the computer and if necessary a second or even third laptop could be secured. In this way, the classroom would still constitute a LTE, but as a result of a conscious decision to limit the number of computers to foster interaction among learners working together *at*, *with* or *around* the computer, according to Egbert's (2005) definition of a CALL classroom. With this limited selection of computers, the focus would not only be on the "tool" image of the computer, but on its social function and, consequently, on its embedded status within the classroom.

This adjustment to the research design was also somewhat supported by the choice made by one of the groups in the Pilot Study. This group chose to create a PowerPoint presentation as their visual aid for the final oral delivery (see Photo 5).

Photo 5 Group visual aid using PowerPoint



In creating a presentation using PowerPoint, pupils replicated the mindmap constructed with the FreeStyler software during their preparation phase and used this format to structure the entire presentation. In other words, the combined

concept of the process of appropriately structuring a presentation was replicated using the features of the PowerPoint software.

In the main studies, therefore, greater attention would be given to pupils' perspectives of the ways in which they actually engaged with the computer to shed further light on the questions guiding this research endeavour, that is, understanding the way in which conditions for learning can be improved as the computer's role is meaningfully normalised in the language classroom.

Finally, in addition to this issue, some further considerations which were made regarding the issue of "normalising" the use of the computer were adopted from Chambers and Bax (2006), as this issue would come more sharply into focus in the main case studies.

One such issue in the area of logistics raised by Chambers and Bax (2006) was that of teacher preparation time. While in this Chambers and Bax (2006) study, teachers indicated that more time would have been needed to allow them to prepare CALL materials and activities, the authors suggest that this perception may be connected to other factors. If teachers are not aware of the various roles which the computer can play in language learning and can only imagine themselves spending hours sourcing and creating materials, it is likely that they will be inhibited from integrating CALL in a regular or 'normal' way into their teaching.

Following on from logistics, Chambers and Bax (2006) mention the issue of stakeholders' conceptions, knowledge and abilities which is addressed in this context. Here one key area of emphasis is on the level of confidence which teachers, for example, need to have with the technology in order for it to become a normal part of the classroom setting.

In this connection, it can be argued in general that having only one computer in the classroom can contribute to reducing the feeling of being overwhelmed by the technology. In their study, Chambers and Bax (2006) found that one misconception which could have affected teachers' level of confidence in implementing CALL activities in the classroom was that once the computer was brought into the classroom, they assumed it would mean having pupils sit in front of the computers for the entire duration of the lesson. This produced some measure of discomfort as teachers saw themselves playing an insignificant role.

The value of limiting the technology so that only some pupils are engaged in the CALL task at a time, could, therefore, contribute to giving teachers a measure of security in recognising that despite the presence of the technology, they still play a significant role. In addition to this, teachers would be allowing their pupils to work more flexibly and in a more balanced way with classroom artefacts as time on the computer would need to be coordinated and combined with other phases of work.

It is evident, therefore, that there continues to be a need for a broader understanding of what constitutes CALL and it is for this reason, that I support Levy and Hubbard's (2005) concept of "a broad view of CALL as the field that is concerned with how the computer mediates between the language learner and the language learning objectives... so that the computer, the language learner, and the language learning objectives are at the heart of the matter." (Levy & Hubbard, 2005: 146).

7 Interaction in the one-CALL classroom

A presentation and discussion of the research findings of Case Study One as they relate to issues inherent in Research Question Two and as seen from the AT perspective

7.1 Introduction

As elaborated on in Chapter Two, investigating the nature of interaction from the sociocultural perspective has been acknowledged by researchers in the field of SLA as an essential step in arriving at a balanced view of the language learning process.

Firth and Wagner's (1997) reminder that this balanced view would allow us to be "better able to understand and explicate how language is used *as it is being acquired through interaction*..." (Firth & Wagner, 1997: 296, italics in original) dovetails with the focus of this work to explore how interaction is actually architectured within a specific CALL environment. In other words, this research offers a framework within which to define the interaction and analyse how the features of a one-CALL AS intertwine. In so doing, the nature of the interaction as it contributes to enhancing conditions for learning within CALL is explicated.

In the Pilot Study, it was noted from the perceptions of the pupils that interaction can be interpreted as occurring on different levels. Within the one-CALL classroom, the various interaction constellations can be numerous as pupils work with each other and with the computer at different phases and combine on- and off-computer tasks in distinct ways. It, therefore, becomes a challenge to explore the complete architecture of this scenario. Consequently, in this first main case study, following on from the Pilot Study, a microscopic approach to defining the various levels of interaction in this scenario is adopted. In this way, it could be ascertained what specific potential the computer, as a normal, integrated artefact has to offer at the particular moment at which pupils choose, are encouraged or are required to use it. In other words, the nature of the interaction taking place in this specific AS within the classroom would be the focus of Case Study One.

As previously alluded to, what is of key importance in analysing this system is identifying the role played by each feature of the system and determining how these roles interrelate and contribute to defining the relationships which can further improve the learning experience.

This chapter, therefore, looks more closely at how the interaction itself in the one-CALL classroom in terms of the relationship between the subjects and the object of the activity as they are mediated by the available artefacts can be defined (see Section 4.2 for an overview of the components of AT).

As outlined in Section 5.2.2, the specific objective of the analysis of this interaction among these components was to arrive at a series of descriptors which would characterise the activity in this integrated classroom

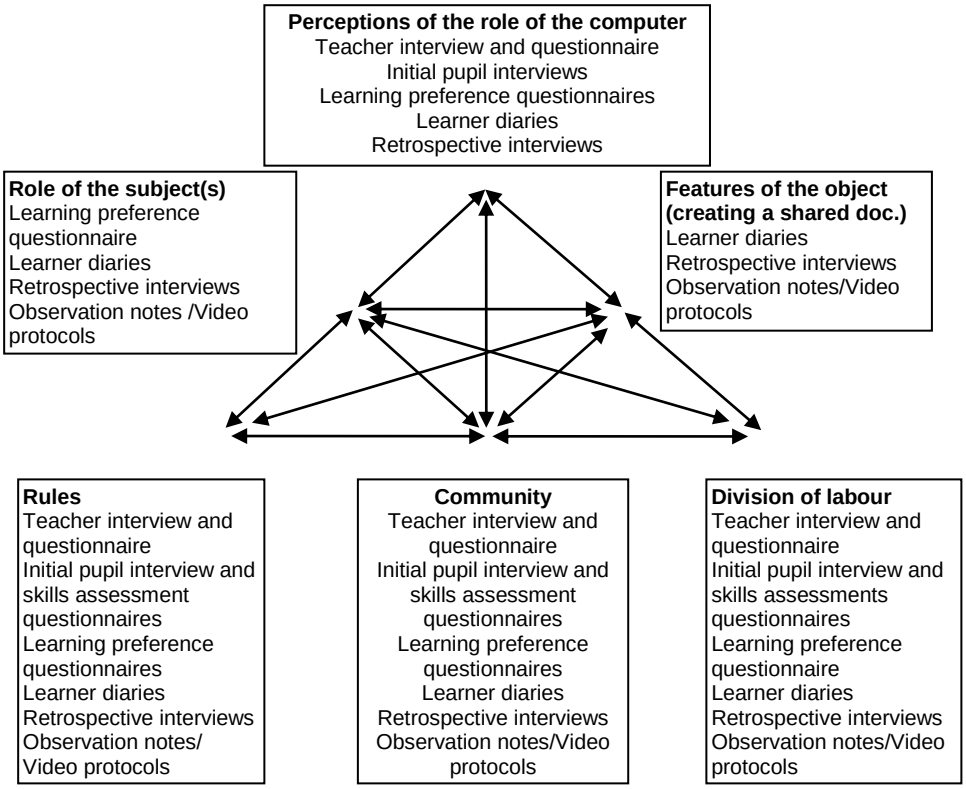
These descriptors, grounded in the perspectives of the learners themselves on their learning experience as documented in learner diary entries and interviews (see Figure 7.1) would then be corroborated with a brief analysis of a “frozen moment” of interaction captured in the video protocols and its related thick descriptive observation notes.

In order to provide an overview of the results obtained from the data, the AS of this CALL classroom will be graphically illustrated. This will serve as the framework within which the descriptors will be classified to provide a basis on which to analyse the nature of the interplay between the various elements which constitute the AS.

As a further step, the descriptors will be compared with the definition, according to Hubbard (2009), of what can be said to constitute learning improvement in CALL (see Section 6.2).

In this way, the descriptors coming out of the data can be anchored in established understandings of what can be called “effective” use of the computer and ultimately, further contribute to the afore-mentioned improvement, particularly as it applies to the integrated CALL classroom.

Figure 7.1 Overview of data triangulation process leading to the identification of descriptors characterising a one-CALL Classroom AS – Case Study One



In order to provide a systematic analysis, this chapter will be elaborated as follows: Firstly, a summary of the project, detailing the context and how the project developed and was designed, will be presented.

Secondly, a profile of the participants, based on initial self-assessment questionnaires from and sample interviews with the pupils will be analysed. This will serve to establish an overview of the rules, the nature of the community and division of labour within the group, in other words, to understand the wider (inherent) structure of the classroom – thus forming an internal Level Three perspective of the classroom AS (See Section 4.2.3). The view of the teacher will also be included in this overview to provide a more holistic picture of the AS as established prior to the project.

Thirdly, the perceptions of the pupils and their teacher on the use of media in general and the computer in particular are addressed. This will be based, in the first instance, and as indicated above, on initial pupil and teacher questionnaires and interviews, complemented by pre and post project learner diary entries.

Finally, following an analysis of an interaction scene around the computer, the chapter closes with a restatement of Hubbard's (2009) understanding of learning improvement as applied to the understanding arrived at of the AS of this integrated classroom.

7.2 Background: A project summary

For the period of roughly five months (comprising the major part of the second half of the school year – February 2004 to June 2004), I worked with a group of 19 EFL pupils in Class 11 at a German grammar school. This means that they were in their seventh of the nine years comprising the grammar school programme at the time of the study. The school, located in the Federal State of North Rhine-Westphalia, was considered to be among the best technology-outfitted grammar schools in the state, according to information provided by the then principal of the school in a personal interview which I conducted with her concerning the computer facilities available.

The teacher of the class, a colleague of one of my previous project partners from the University of Duisburg, had expressed her openness to learning about the meaningful use of technology in the language classroom. On this basis, she was recommended to me as a possible cooperation partner for my research and cordially agreed to embark on a project looking at possible complementary uses of the computer in the English classroom.

As argued in Chapter One, in terms of CALL, this school can be classified as offering *limited* technology access in the sense that while there are adequate numbers of computers available for use, limited access is made of the facilities available. This, as Chambers and Bax (2006) indicate, is a result of a number of context-specific logistic, stakeholder, curricular and support issues related to the integration of computer technology in a normal way in the classroom (see Table 3, section 2.3.1). Of particular relevance in this case, and as confirmed by three language teachers at the school, are the issue of logistics and the attitudes of stakeholders. The challenge posed by these issues was evident in the teachers' responses to the use of technology in the language classroom:

> *"Medien, Medien, Medien. Ich hasse es. Es nervt mich. Ich komme damit nicht klar". [Media, media, media. I hate it. It annoys me. I can't cope with it.]*

[Informal Notes – Case Study One, French Teaching Colleague, 25.03.2004].

> *"I asked Frau Reinhart (name changed) to tell me a little about the experience with her 7B pupils as far as using the computer is concerned. She reiterated that it is "just" one computer, but the class got a second PC that very week. She indicated that one computer in the classroom is good for more project type lessons, but this requires a lot of extra work and taking the beamer to the classroom, trekking down the stairs, moving from one building to the other "is a long journey".*

[Informal Notes – Case Study One, English Teaching Colleague, 22.04.2004].

> *"My personal feeling about using the computer in the classroom is that I do not have enough practice in how to apply a single computer as a resource. It has come in useful in 'Freiarbeit' (independent work) though, during which students use CDs additional to working with traditional material".*

[Teacher Reflections Questionnaire – Case Study One Teacher, 29.03.2004].

These comments not only demonstrate the personal attitudes of a sample of teachers, but also give an indication of the challenge they face in terms of the actual classroom set-up and as recommended by Chambers and Bax (2006) that "CALL facilities should ideally not be separate from 'normal' teaching space" (Chambers & Bax, 2006: 477). From these comments, it can also be noted that teachers seem to need a forum for reflecting about the way in which the available resources can be used in an efficient manner. Independently, these three teachers seem to have been at a loss for ideas on how the computer in its current state in the classroom (one PC) could complement the classroom learning experience for the pupils. However, within the context of the research project, already in our first email contact, the teacher made a suggestion to me about how she imagined the computer could be used to coincide with the requirements of the Class 11 programme.

> *"I have a couple of texts in mind and some ideas how to tackle the term. It could be something like 'Concepts of happiness in the modern society'. As there is a focus on presentation skills there should be some way of bringing in the computer. What do you think?"*

[Personal email correspondence – Case Study One Teacher, 15.04.2004].

Following our first round of email exchanges we, therefore, met to discuss her ideas, refine them based on the classroom logistics and decide on a schedule for the series of lessons. We both firstly agreed on the specific objective of the

lessons which would be to offer pupils more practice in text analysis and in preparing visual material for presentations. As my research interest and the teacher's pedagogical interest were to offer some flexibility in the use of the computer in the classroom, the pupils would have the option of using the computer as a complementary artefact within the classroom rather than be compelled to use it. In this way, the computer would be available on demand, among the other presentation media, for those who opted to use it as a means of support.

We saw this decision as having two basic advantages. One advantage would be that there would be a greater chance of allowing the pupils to experience the computer as an integrated artefact and the other advantage would be, for the purposes of the research, that it would make the logistics of a microscopic observation of the interaction around the computer possible. This meant that the interaction of those pupils who will have chosen to use the computer, would be the focal point of the research.

We also thought that in order to better support the pupils in creating their presentation, it would be important to train them in the use of the different presentation support options which would be available to them. It was, therefore, decided that I would run a workshop or training session to demonstrate the various presentation possibilities available in the classroom, that is, the overhead projector, the pinboard, posters and the computer (on which Microsoft PowerPoint would be available). As I had also been informed by the principal of the school in an interview, those pupils who had chosen IT as their optional subject at the beginning of Class 11 will have learned to use the computer as well as PowerPoint. This meant that the training would not involve the details of the functionalities of the programme, but instead provide an overview of the above-mentioned media and how they can best support an oral presentation. In this way, the computer would be introduced into the classroom as one option which students can access in preparing their oral presentation. Another consideration which we made in preparing for the lessons was the way in which the class would be set up. We decided that after the teacher had introduced the topic as well as the project and its objectives, the pupils would be given the opportunity to choose their preferred media support for their presentation.

In our reflections about integrating the research project into the natural classroom setting, we saw my researcher presence as possibly posing a challenge initially. In

order to address this issue, I attended the classes prior to the start of the project in order for the pupils to become familiar with my being in the classroom. I also used the laptop and the digital projector for the training session, in which I did a PowerPoint presentation so that it would not be a complete novelty once the project had started. This provided me not only with the opportunity to clarify the ways in which the various media could be appropriately used (that is, slides on the overhead projector, coloured cue cards on the pinboard, arranging information on posters and creating a PowerPoint presentation on the computer), but to model effective use of PowerPoint.

In outlining the structure of the series of lessons, I defined both pedagogical and research objectives. This would help to ensure that the learning experience remained in focus and did not become overshadowed by the research (see Table 15). As Table 15 also shows, I defined which aspect of interaction would be the likely focus of each session as well as which mediational means could be observable within the interaction and consequently provide evidence of the nature of the learning experience

Table 15 Overview of objectives, interaction and mediation in the pre-project and main project – Case Study One

Session	Pedagogical objective	Research objective	Interactional focus	Mediational means
Pre-project (Film analysis) (7 sessions)	Pupils begin discussion topics of interest to young people using film and text analysis	Pupils become familiar with the researcher's presence and with the video camera	Pupils share and exchange information on the topic with the teacher	Oral exchange
Main Project 1 Workshop (Part A - Introduction)	Pupils become aware of the relevance and importance of structure and clarity in creating visual support for presentations	Pupils are given the opportunity to compare and contrast the various visual media available to them in the classroom	Pupils have the chance to pose questions to the teacher and the researcher during the workshop	L2 Researcher presentation using the computer
2/3	Pupils learn	Pupils begin to	Pupils have	Pupil preparation

Workshop (Part B – Review and application)	to apply the strategies learned on selecting relevant information and organising key points logically	get comfortable with the new learning set-up (the one-CALL classroom) and with the researcher's presence	the chance to work hands-on with the various media	of sample presentation documents
3 Group discussions (Topic A)	Pupils reflect on the information and begin to select key ideas for their presentation document	Pupils begin preparing their presentation by engaging in on- and off computer activities	Pupils share and exchange the information they have gathered after having read the text at home	Oral exchange
4 Presentation preparation (Topic A)	Pupils continue to work on the presentations, being more selective regarding the key points for presentation	Pupils continue to create their document and during the process, demonstrate how they are arriving at a shared product	Pupils continue to engage collaboratively to arrive at a shared product	Pupil preparation of presentation documents
5 Presentations (Topic A)	Pupils present their content using presentation documents as visual support	Pupils use the documents created as examples of products resulting from their interaction	Pupils present their topic clearly and well structured using presentation documents as visual support for their oral delivery	Presentation documents as visual support
6/7 Teacher moderated whole group discussion/Small group discussion (Topic B)	Pupils reflect on the information and begin to select key ideas for their presentation document	Pupils begin reflecting on their presentation and engage in off-computer discussion	Pupils share and exchange the information on the topic with the teacher and with each other in their groups	Oral exchange
7/8 Presentation preparation	Pupils work on the presentations,	Pupils begin to research their topic and	Pupils continue to engage	Pupil preparation of presentation documents

(Topic B)	being more selective regarding the key points for presentation	create their document while demonstrating how they are arriving at a shared product	collaboratively to arrive at a shared product	
9 Presentations (Topic B)	Pupils present their content using presentation documents as visual support	Pupils use the documents created as examples of products resulting from their interaction	Pupils present their topic clearly and well structured using presentation documents as visual support for their oral delivery	Presentation documents as visual support

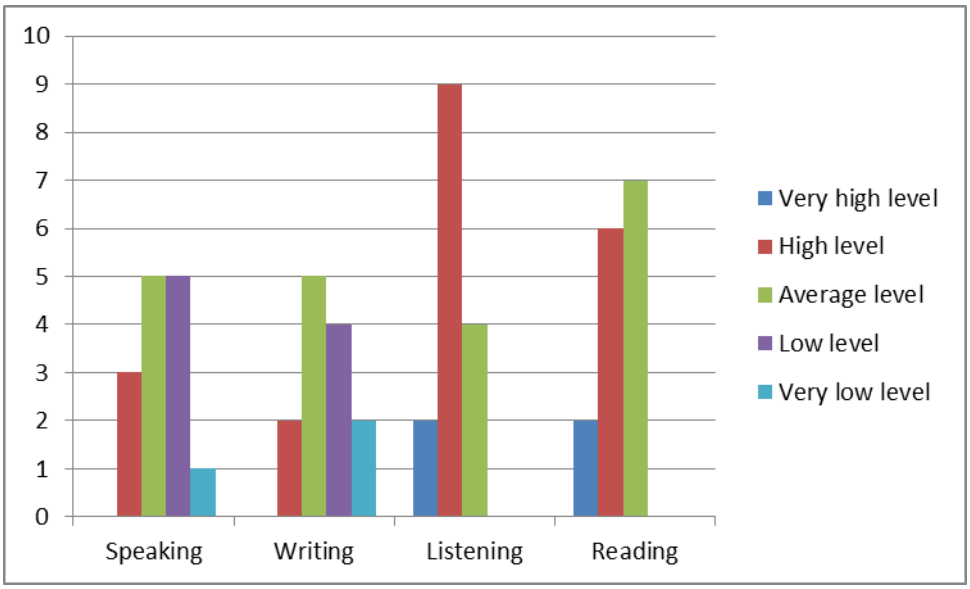
7.2.1 Participant profiles

In order to firstly provide an overview of the skills which pupils saw themselves possessing which were directly relevant to the lessons and which would be used to establish a profile of the group, the pupils were asked to complete a skills assessment questionnaire prior to the project (see Section 5.2.3.1). The questionnaire was divided into three sections addressing pupils' language, social and media skills.

7.2.1.1 Pupils' self-assessment of their language, social and media skills

The responses provided by the pupils who completed the questionnaire revealed that overall they saw themselves being able to operate at a higher level in the receptive skills of listening and reading comprehension than in the productive skills of speaking and writing (see Figure 7.2).

Figure 7.2 Pupils' self-assessment of their language skills – Case Study One



While the group rated their speaking and writing skills on a broader spectrum from very high (three pupils) to very low, with the group peaking at average, listening and reading were rated between average to very high (peaking at high in listening).

This image was further confirmed by pupils' optional response to the question of which skills they saw themselves being best at and weak at. While a majority commented that they were best at listening (10 pupils) and five indicated that they were best at reading, four indicated that they were weak at speaking and five that they were weak at writing, with only one pupil indicating being weak at reading.

Based on this range, it can be assumed that opportunities for supporting speaking activities, such as through the use and development of presentation techniques, would further support pupils who had strong speaking skills and moreso those for whom speaking was a challenge. This would, therefore, address one important need in pupils' language learning experience which could, in turn, impact positively on their perception of the learning experience in general.

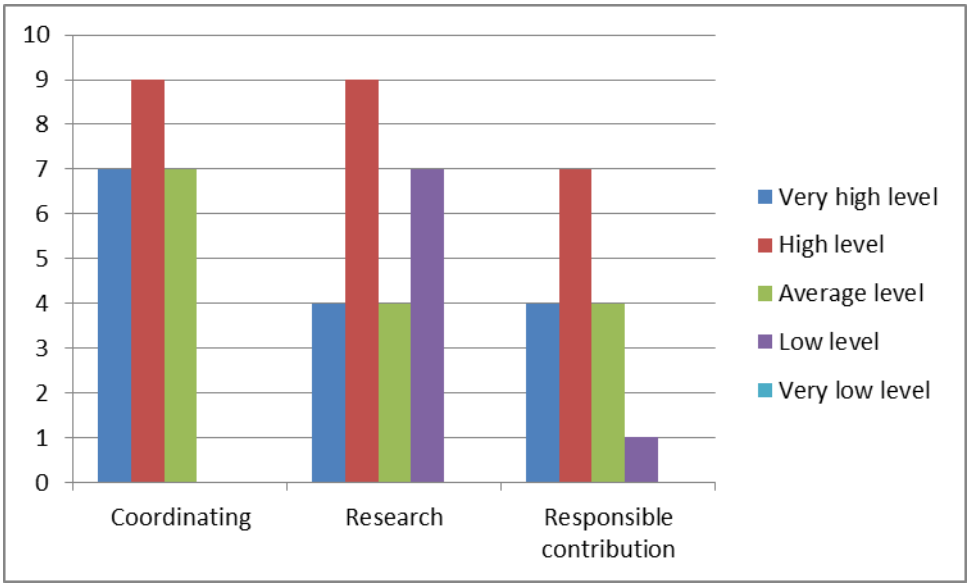
In terms of their skills in working with others in the classroom, pupils indicated on average that they saw themselves functioning at a very high to average level when required to coordinate activities within a group (see Figure 7.3). While the group indicated a very mixed spectrum in their research skills, completing their part in a

group activity was rated very high to average on the whole, with only one person indicating that they functioned at a low level in this area.

Of the few responses to the open question on what they thought they were best at and weak at, six pupils clearly identified making a responsible contribution in a group as their strength.

From this profile, it could be suggested that pupils interact actively in group work, as no pupil indicated working at a low level when coordinating activities within a group. This aspect of the profile further suggests that pupils manage well in interaction and certainly ascribe value to working well with others.

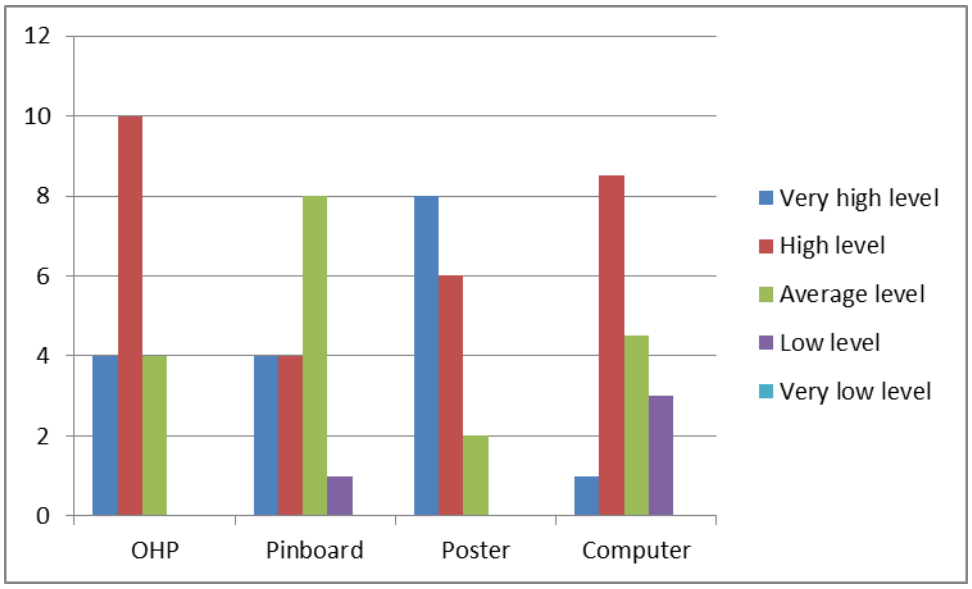
Figure 7.3 Pupils' self-assessment of their social skills in the classroom – Case Study One



With regard to pupils' self-assessment of their skills in the use of media, at least half of the pupils indicated being able to use at least one form of the media at an average to very high level (see Figure 7.4). This means that on the whole, there was a representative group of pupils who felt comfortable with at least one form of media which would be used during the lessons. With specific regard to the computer, it should be noted that while only one pupil indicated being able to operate at a very high level, the majority of pupils indicated that they were able to work at high to average level, with only two suggesting that they could only use the computer at a low level and one other marking between average to low. It is,

therefore, worth noting that no student rated their use of the computer at a very low level.

Figure 7.4 Pupils' self-assessment of their skills in the use of media in the classroom – Case Study One



Having arrived at an assessment of the pupils' skills in the classroom which were deemed relevant to the research project, they were also asked to provide information on their experience learning English in the classroom and on their particular preferences.

A second questionnaire was therefore given to the pupils prior to the project (see Section 5.2.3.1) which gave them the opportunity to respond to more open questions regarding learning English.

This questionnaire was divided into three sections. In the first section the pupils were asked to formulate what they think about learning English and what they particularly enjoy and do not enjoy.

Section two required them to circle options indicating which specific media and social forms are used in their English classes and what their particular preferences are.

In the final section, they were asked to give their perception of the best way to learn English and to indicate whether they think they had been experiencing their learning in this way.

The results of the questionnaire can be summarized as follows:

The predominant characteristic used among the 19 pupils (the entire group) to describe learning English was that it was important for their future and for life. In addition to this value ascribed to learning English, a few pupils defined learning English in terms of how they evaluated their experience during classes, that is, interesting, fun, on the one hand, and boring and difficult on the other hand. In these latter cases, four pupils made such remarks. This suggests quite clearly that pupils recognise a significant value in learning English. Their experience was also more fully detailed in their response to the questions regarding what they enjoy and what they do not.

The majority of responses related to enjoying English class focused on working in groups, watching movies, having discussions and addressing interesting topics. Two students also mentioned that they enjoy a nice atmosphere. Here, it can be seen that the social form as well as interesting stimuli and active participation seemed to be a priority within the group.

Pupils did not favour too much reading or extended teacher talk which minimised their participation, nor did they enjoy writing notes from the blackboard.

It, therefore, could be deduced that the pupils place a certain value on learning English within an environment which supports interaction.

In terms of pupils' preferences, it was clear from the tally of the responses that they particularly like using videos, dvds and novels in the classroom. Additionally, as far as their preference for a social form is concerned, the vast majority prefer to work in small groups (13 pupils), while another representative number (5) prefer to work in pairs – this latter again being a sure indication that social interaction within the classroom falls in line with the pupils' preferred style of working. This speaks positively for the research endeavour since for the most part pupils would be engaged in working within their comfort zone.

Finally, according to their perceptions on the best way to learn English, pupils mentioned a range of strategies. Primary among these were speaking in English, dealing with interesting and everyday topics and working on projects or in groups. Each of these strategies were mentioned by at least four pupils. Two detailed comments which were offered in relation to working in groups focused on the possible benefits of this social form of learning:

> *"And it has to be fun, with games and projects that you can learn and find out about the things on your own without the teachers help";*
>
> *"I think the best way is to work in groups, because you can ask the other students in your group and communicate with them and so it is really easy to learn English".*

[Excerpts from Case Study One – Learning Preference questionnaire] (see Appendix 15 for samples of Learning Preference questionnaires and Appendix 16 for Corroborative analysis of critical friend).

These comments can be said to represent understandings of learning as something of a shared experience with interaction among peers playing an important role in this constellation.

7.2.1.2 Teacher reflections on language and social structure in the classroom

Based on a questionnaire as well as an interview conducted with the teacher at the start of the project, a number of overlaps with the pupils' assessment of the learning environment could be confirmed.

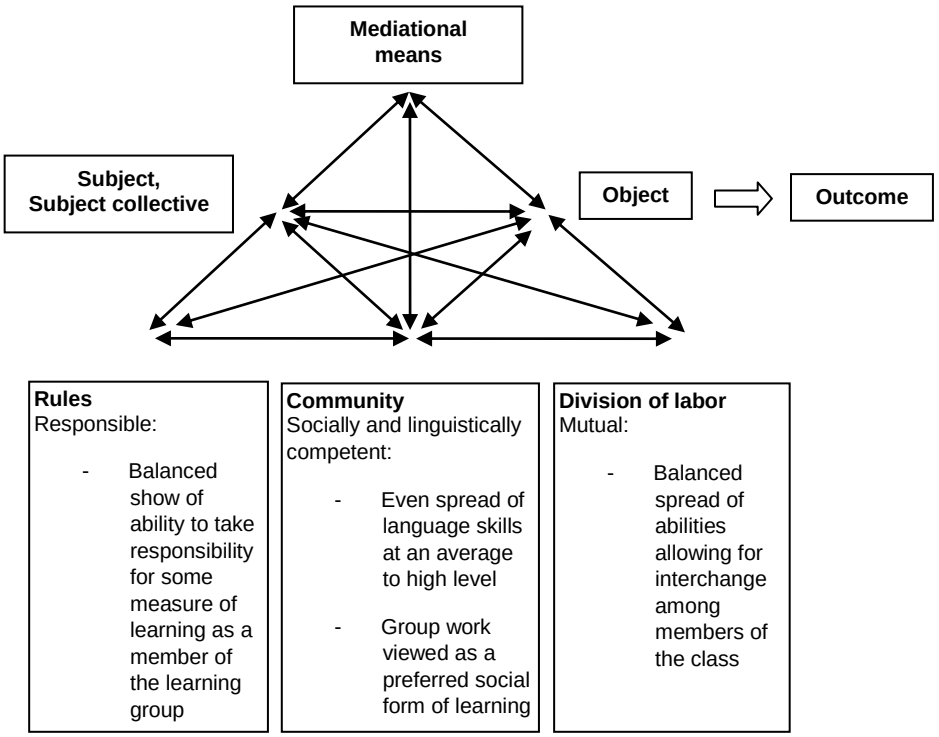
In terms of language skills, it could be seen from the teacher's reflections that pupils need a lot of support in developing their "confidence to express themselves". This was evident in the fact that, for the most part, pupils did not rate their speaking skills very highly.

In terms of social forms of learning, the teacher describes her teaching strategies as diverse and spanning the entire spectrum of options available in the classroom from group work to what she terms "teacher-orientated classes". This was also true for the span of media which she used with her classes which ranged from the use of the DVD player to transparencies to the workbook.

On account of the profile presented by the pupils and the teacher, the social structure of the classroom can be said to revolve around the belief in a supportive learning environment. Based on the profile gathered from the pupils, this environment can be seen as constituting a cooperative atmosphere in which learners seem to balance out each other's skills. From the learners' self-assessment, it can be determined that the group constitutes what can be described as a balanced unit in which skills and social interaction are not

dramatically disparate. Figure 7.5 depicts the general social structure of the classroom from an AT perspective.

Figure 7.5 Overview of the social structure of the classroom as represented at Level Three of the AS – Case Study One



7.3 Pupil and teacher perceptions on the role and function of media

Having established a participant profile in terms of pupils' self-assessment of their skills as well as their understanding and preferences in relation to learning English, interviews were also conducted with a sample of pupils from the group and with their teacher. The objective of these interviews was to understand their perceptions on the specific role and function of the computer and to begin ascertaining from the data, in which way the "community" viewed the computer within the learning context. In this way, it could be established whether there were mainly shared or divergent views or interpretations of the use of the computer in the classroom. The above-mentioned data. also supplemented by the data collected from two diary entries made by the pupils in learner diary sheets with which they were provided, offered insight firstly into their perceptions on the use of media in general and, following the project, on the use of the computer in the classroom in particular. It should be noted that while the teacher did not play an

active role during the interaction, as Bax (2011b) indicated in his review of the process of the normalisation of CALL, teachers can be seen as change agents. It is, therefore, worthwhile to consider their views as part of the classroom community. It is based on this appreciation that the results of a questionnaire as well as a pre-project interview with the teacher will be presented alongside the data collected from the pupils.

7.3.1 Emic perspectives on learning with the use of media in general

Based on the assessment made by pupils regarding their skills, it was apparent that they felt capable of using specific types of media. Of particular importance to the research was, therefore, to follow up on the way in which they perceived their use.

Before moving on to a microscopic view of the one-CALL AC in this case study, it was, therefore, considered worthwhile to examine the AC of this classroom in phases involving the use of media: during a pre-project phase and during the case study itself. In order to provide this picture, pupils were asked to complete a learner diary prior to the project. The pre-project diary entries were based on their reflections on the lessons conducted during the analysis of the film “In and Out”. During these lessons, the pupils viewed various scenes from the movie and analysed the cinematographic effects used in the production of the movie as well as the themes addressed.

While this constellation did not form part of the original data-set, I decided to capitalise on the opportunity presented to consider learner perspectives on media in general. This is owing to the fact that these reflections would serve as a complement to the ensuing project as it would provide a further basis on which to ascertain the way the pupils perceived effective and efficient use of technology in general. In other words, an expanded understanding of the key elements contributing to the learning experience could be identified, that is, the specific features and the interrelating roles at play in the AS of the technology-supported classroom in general, and in a CALL classroom in particular. Additionally, and as called for by Chapelle (2000) (see Section 5.2.5.2), the data provided by these learner diary entries would help in contributing to the CALL texts created in this learning context, as the focus would be on the pupils’ perceptions on the ways in which the media could contribute within the social constellation of the learning

environment. In other words, the focus of the analysis could move beyond the role of technology as an artefact toward its integration within the social constellation of the learning environment (see Section 2.2).

Similar to the way in which the learner diary entries were analysed in the Pilot Study, in order to capture the perceptions of the learners on how they experienced learning, these pre-project learner diary entries were also classified according to key themes and then further examined for clarification or supporting evidence to elucidate these themes. However, in this present case study, based on the projections established at the end of the pilot study and as already extracted from the student questionnaires, the focus would be on the AC (see Figure 6.4).

What immediately became evident in classifying the pupils' responses to the questions posed in the learner diaries on their perceptions of "learning" and more specifically on how they viewed the use of the media and the social form in which they were learning in general in the pre-project phase, was their identification of the lack of social interaction.

While pupils identified the usefulness of the media for media literacy and developing vocabulary skills, on the other hand, they lamented about the lack of opportunities for interaction which was seen to be a generally preferred social learning form among them (see Table 16).

This can again be linked to the fact that the teacher's expert role at the level of orchestrating the learning environment needs to incorporate reasoned choices about how to activate learners sufficiently in any technology-supported learning context (see Bax, 2011b).

In short, in articulating their perceptions of the learning experience, the pupils expressed a clear appreciation for learning how to analyse films and understanding the effects produced by the cinematographic features as well as extending their vocabulary. The effectiveness of the media can, therefore, be said to lie in the fact that its potential for extending pupils' knowledge was achieved as students recognised and expressed this view for the most part in positive terms.

Table 16

Classification of pupil responses on how they perceived the learning experience in the pre-project to Case Study One (Film analysis of the movie "In and Out")	
Media used: Potential	**Learner perceptions**
Video player and Television: Developing media competence;	**Meaningful use of media:** "It is easier to use the media now, because you **know all the technical terms** and you **can analise a film really easy** now." "I've learned **to see, how camera and acting are connected**." "I learned…**how to watch a film and understand most of the things**. And of course **about camera movements**." "I learned something **about camera shots and movies in general.**" "I learned **about camera ranges, camera movements and camera angles, the whole things that are specific for films.**" "I learned **to analyse a movie**."
Developing language skills;	**Vocabulary:** "I think I learn **new words** to analyse a movie." "I learned **a few new vocabulary**." "Of course I learned **new vocabulary**, especially the camera ranges." "I've only learned **some new vocabularies**…"
Stimulate student participation	**Little opportunity for interaction:** "I think it was allright, but **it could have been more working in groups and more talking,** not just writing on the board." "Maybe it would have been **better to make a little project in small groups**." "I think we could have **more work in groups**. For example we can analyse different szenes in small **groups better**. "I think **we could divide the film in different scenes and work in groups** on one scene." "**If we have worked in groups** and make papers ect." "**We could have worked in groups**." "I think it would have been better to watch different scenes of the film and **work more in groups**." "I think **we could have worked out somethings in groups**. For example to analyse a scene."

Additionally, while pupils generally did not see themselves developing a range of language skills, most pupils valued having acquired a new range of vocabulary, which one pupil admitted, however, did not have any future relevance for him.

With regard to the social constellation of the classroom, as mentioned above, while it can be said that the media offered the potential to stimulate interaction, admittedly, the lessons were not organised in a way which could realize this potential. In the perception of the pupils, as can be seen from the representative sample of comments in Table 17, the mediational means of the media was not exploited in a way which could facilitate interaction.

Another critique expressed by half of the pupils was their lack of interest in the lessons as a result of the lack of variety in the design of the lesson structure. This, they identified for the most part, as a direct result of a lack of interaction.

7.3.2 Etic perspectives on learning with the use of media in general

In observing the seven lessons preceding the project, it was apparent that the teacher opted for a predominantly "teacher-orientated" approach to the analysis of the film with occasional pairwork. On each occasion the video recorder and the television were brought into the classroom and the pupils viewed scenes and were asked to comment on them. In these sessions, I wrote observation notes detailing the procedure of the lesson and organisation of the classroom. In analysing these notes to arrive at an understanding of the way in which the media were put to use, it became evident that the media were being used in a methodical manner as a number of scenes were repeated to allow pupils to analyse different aspects of the movie in terms of content and cinematography. As the following extracts from three of the sessions demonstrate, while much can be seen of the way in which the tool (in its instrumental sense) might have been indispensable, there is little evidence to demonstrate learning efficiency in a broader sense:

1. *In the first session, the introduction to the film, the pupils sat in their regular U-shaped class form with two additional middle rows, each consisting of two desks. They viewed the film from beginning to end and were asked to write a summary of the film for homework…*

2. *In the second session, the teacher distributed handouts with film analysis vocabulary. She elicited pupils' views on the film in general and made a list of new words and expressions throughout the lesson. Pupils were asked to read their summaries and as there were no volunteers, the teacher selected four pupils to read theirs. The teacher then tells the class they are going to view the opening sequence of the film and they are to take notes. Pupils help her construct a list on the board of things they could concentrate on when looking at characters:*

- *Relationships between the characters*
- *Character traits*

- *Appearance*
- *How they behave*

…

The sequence is replayed and the teacher elicits further comments on the various categories…

3. *Today, pupils are asked to identify vocabulary which they covered in the previous class. The teacher moderates the contributions. She then draws their attention to the sheet "Selected terms for analysis" and asks individual pupils to read out terms and definitions: camera angles, camera range…*
   In this session, the teacher asks pupils (one at a time) to read camera movement terms. She takes care to help them with pronunciation.
   They are then asked to view the opening sequence to observe the types of shots used and perhaps why they are used.
   They then work in pairs to exchange their information and are reminded and encouraged to use English to get the most out of the spoken language.
   The film is restarted and left rolling during the pair work (15 minutes).
   There is a whole class discussion on the shots and for homework, pupils are asked to get used to the terms and write out what is shown in the camera work and what effect it produces. They are to answer the question: How is Howard characterised and how does camera work help to introduce him?

[Excerpts from Case Study One – Observaton Notes, 19.02.04; 26.02.04 and 09.03.04].

As can be seen from these excerpts, while media is used, according to the teacher herself:

> "*because several media is taught in school as part of the syllabus* [and] *media stimulate students to participate in classroom activities,*"

[Excerpt from Case Study One – Teacher Reflections questionnaire, 29.03.2004].

the opportunities provided for either of these "goals" to be fulfilled is seemingly restrained by the social form. In other words, there is limited engagement with or around the media.

As previously stated, this overview of the perceptions of the pre-project film analysis can be juxtaposed with the perceptions of the pupils following the Main Case Study to arrive at an understanding of the key features of the AS in this constellation which impact on the learning experience.

7.4 Classification of pupil perceptions of the learning experience at the AC

As outlined in Table 15, the nine sessions comprising the Case Study involved the pupils working in groups on presentations which would reflect their understandings of the themes addressed in the text “My son the fanatic” as well as on the topic “Happiness”.

At the end of the project, as in the case of the pre-project, the pupils responded to the questions posed in their pro-forma learner diary. During the project, they were again confronted with the use of media – this time with the computer – and asked to share their reflections on its use as well as on how they experienced the social form of learning. Contrary to the pre-project lessons, they worked in groups, each having opted for their preferred presentation medium.

In their responses to their perception of the learning experience in this series of lessons, themes similar to those arising in the pre-project reflections regarding the use of media and the social form of learning emerged (see Table 16).

Pupils expressed, on the whole, the value they saw in being able to select and use a variety of media as well as the benefit of being able to share their results in different forms. Pupils also mentioned learning and seeing examples of the correct use of the media.

As a critique, however, some pupils saw the time required in which to do their presentations in the classroom as being too short and some even thought that the project could have been better organised in terms of time and structure as things sometimes got hectic.

While comments on how pupils perceived their learning in terms of the development of skills were few, there was some indication that the presentations may have contributed to some degree to helping them develop skills in structuring a presentation and their fluency in oral delivery.

These views which demonstrate a reasoned consideration of the use of media in general and the computer in particular were shared to some extent by the teacher. In response to the question of her specific understanding of the use of the computer, the teacher also expressed the value she saw of using the computer. One particular use for which she saw value was for the development of presentation skills. Referring to the specific use of PowerPoint for the development of presentation skills, she states:

"…it's a help for the students themselves, if they have something...they can hang on to while giving a talk. It helps them to structure their ideas, it helps them to structure what they want to bring across". This point she even further emphasises by relating it to her experience in terms of how valuable it can be in securing a job in the future.

While she admits to having limited experience using the computer, she does see it as 'useful' in certain respects, and like other media which she has used in an effort to vary her style of teaching, she also comments that "…media stimulates students to participate in the classroom activities; media can streamline the efficiency of the classroom activity".

This latter comment is particularly significant as it demonstrates, not an idealistic view of the computer in the classroom experience, but a measured reflection of the extent of its contribution to the learning experience, in which "mediating working together", "supporting orderly production", "supporting big projects", "creating an element of fun and diversity", "stimulating" and "streamlining" can be seen as specific descriptors in defining the role of the computer in the classroom from the perspective of the participants, that is the learners and the teacher.

When reflecting on the social form of working in groups, it was again evident that for the most part pupils valued the interaction facilitated in these sessions (see Table 17).

Table 17

Classification of pupil responses on how they perceived the learning experience in the main project of Case Study One	
Media used: Potential	**Learner perceptions**
OHP, Pinboard, Poster, Computer: Developing media competence;	**Meaningful use of media:** "It was **interesting to see what each group presented**." "…**the different medias were all used correctly**." "…**the media was used in the right way**." "The medias were **helpful**, because **they underlined and improved with pictures the expression of the theme**." "Yes, **the media was useful**, because so **the other groups could better follow the presentation** and we could show them for example pictures what we couldn't have done without media."
Developing language skills;	**Speaking/Presentation skills:** "We could **practice more how to present things in a good way**." "**Maybe speaking is more fluently, because of the presentations**." "**Perhaps I can speak english better than before**." "Yes, I learned **how to use Power Point and transparencies better**." "I **learned how to use power point**…because I've never done it before."
Stimulate student participation	**Good opportunity for interaction:** "Yes, because **we done much things in groups**." "Yes, **we often worked free/in groups**." "Yes, **we all used different media**."

In comparing these perceptions with those of the pre-project, it is clear that despite the similarities in terms of the key areas of focus on the learning experience, that is, learning as the development of media competence, the development of language skills and as a shared experience (see Section 6.7), there is one clear distinction in the way the pupils addressed the latter issue and, as a consequence, the way they view the role played by the material and symbolic artefacts. In order to clarify how the perceptions of the pupils provide insight into the way in which learning is facilitated and which key features are at work within the AS of the language classrooms in this research study, it is worth examining their views from the three hierarchical levels from which interaction can be said to be interpreted

(see Section 4.3). Based on Lantolf and Thorne's (2006) interpretation of these levels (activity, action and operation), the following interpretation of learner perspectives can be rendered:

In the pre-project, at the heart of the AC pupils interacted with their teacher and to a lesser extent with each other (Subject; subject collective), received stimulus via the video player and the television and handouts (which provide material and symbolic artefacts – images, sounds, language) and acted on the object (providing responses to questions posed by the teacher to arrive at an analysis of the film).

In analysing the activity (level), it can be said that for the most part the pupils produced oral responses elicited by the teacher to demonstrate the extent to which they had reflected on and been able to analyse the film. This routine was repetitive and was the major critique mentioned by the pupils themselves. From a sociocultural perspective, this use of language limits its mediational function in terms of mediating interaction. Additionally, and even from a linguistic perspective, its potential can also be said to be restrained if pupils see themselves as predominantly having learned a few new words in isolation, for which they might not be able to see future relevance.

In terms of the learning context, again from the sociocultural perspective, the views expressed by the pupils also suggest that interpersonal processes were not sufficiently supported within the learning scenario. This can lead to the conclusion that the social learning form, as clearly articulated by the pupils, provided a noticeable barrier in realising the mediational potential of the artefacts used in the classroom.

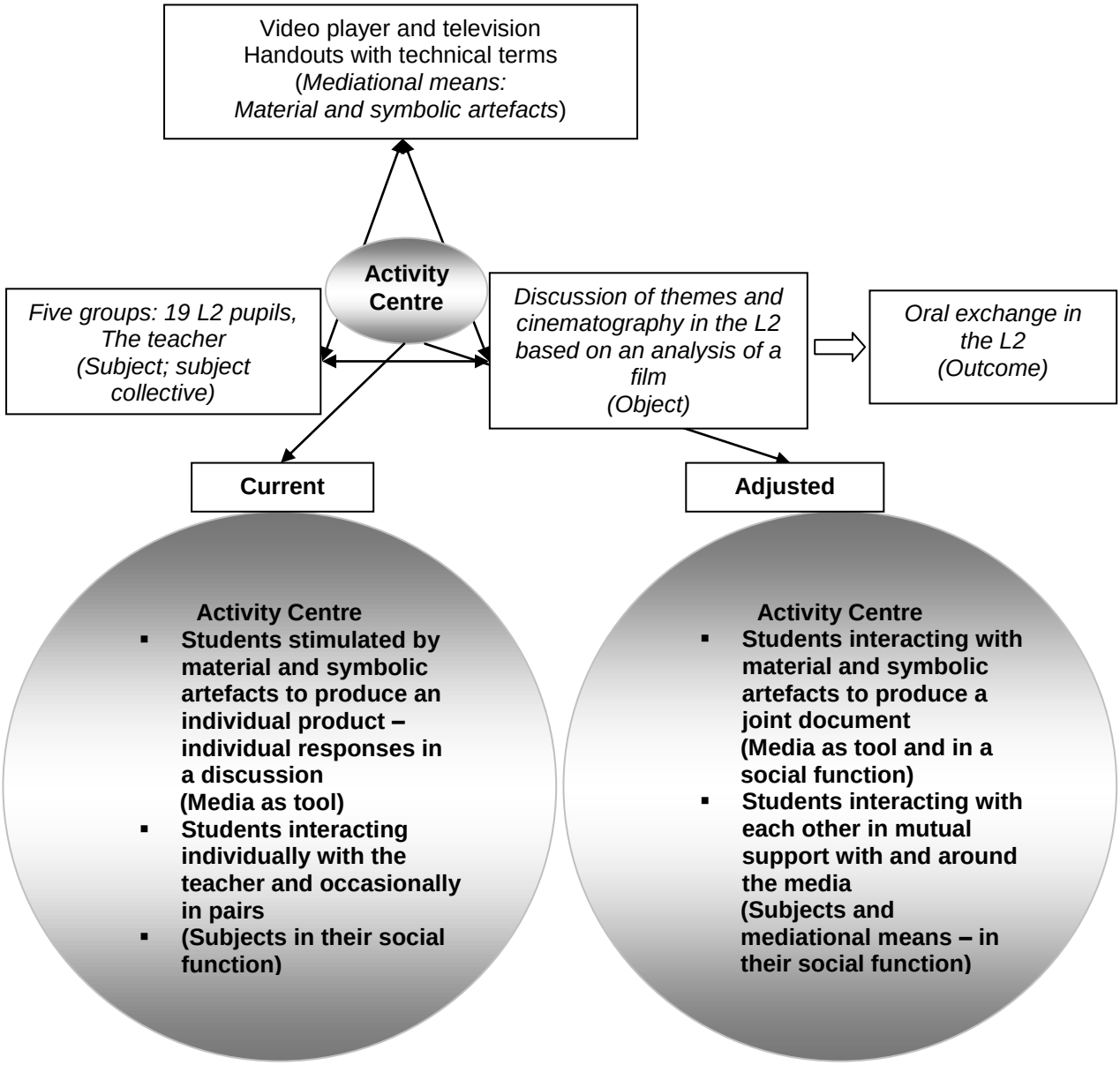
This can also be seen at the level of action, the second level of the hierarchy. The actions carried out by the subjects are all targeted, as it were, toward the teacher. The goal is to produce correct answers which constitute the discussion on the film, with this information being shared on occasion with a partner. Here again, the interaction does not appear to provide a genuine opportunity to produce a shared understanding.

At the third level of understanding the activity, the operational level, pupils' views on how they experience the social form of learning demonstrate the actual impact of the learning conditions on the learning process. At the individual level, pupils did not seem satisfied with the predominantly introspective processes, as the series of

suggestions on how the scenario could be organised to involve more group work seem to suggest.

Taken together, this analysis has implications for the way in which the activity (viewed from the three hierarchical levels) can be adjusted to ensure that the goal of the activity is achieved in a more meaningful way (see Figures 7.6).

Figure 7.6 The AS of the one-CALL classroom as defined in the pre-project to Case Study One based on Engeström's model amplifying interaction at the AC and possible adjustments



In the Main Case Study, the interaction occurred predominantly among the pupils (subject collective) and between the pupils and the media (with the material and

symbolic artefacts functioning as a mediational means) as they engaged with the object (working together to prepare a presentation).

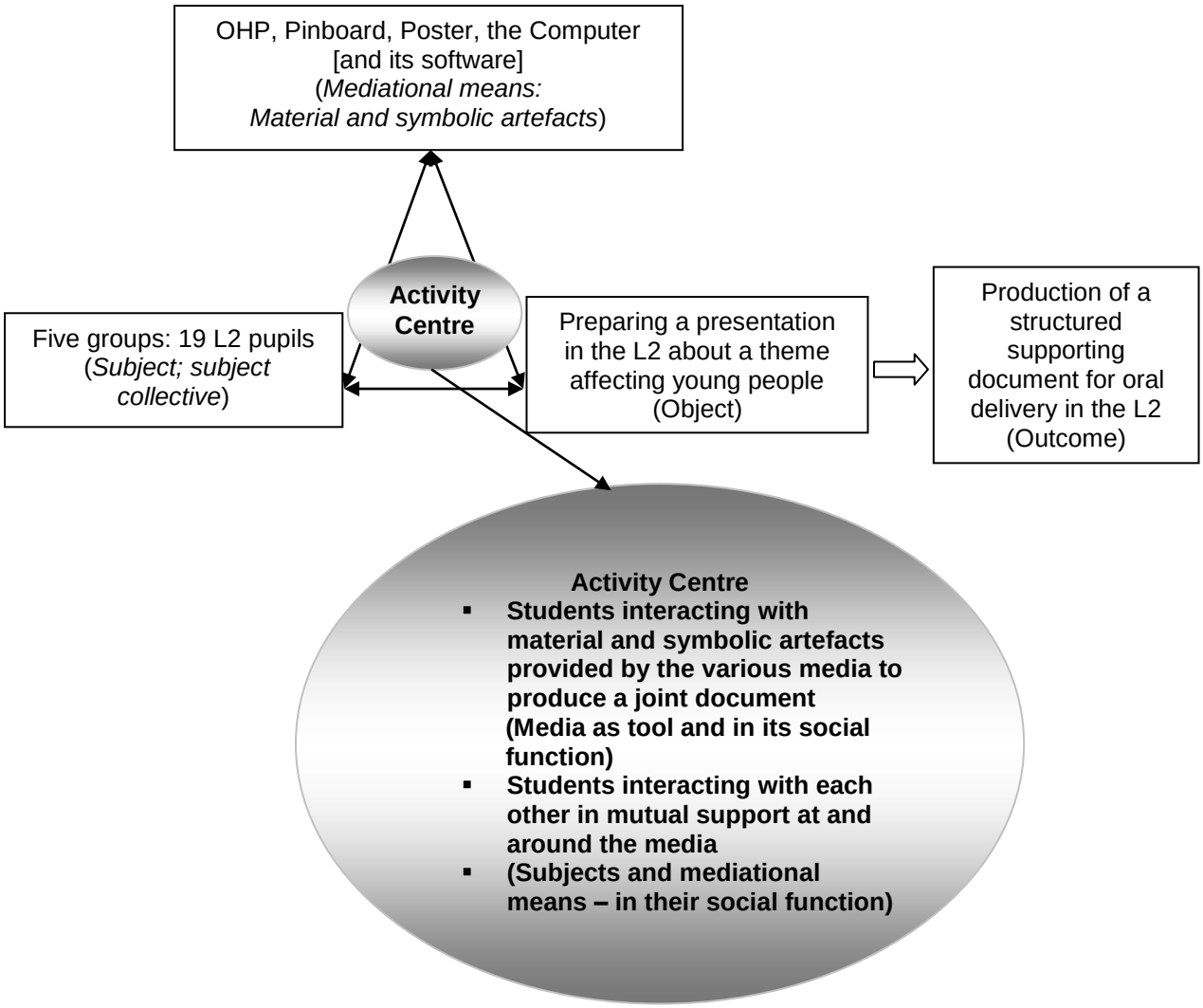
A closer look at the activity during these series of lessons at the first level of the hierarchy reveals more interactive processes. Pupils worked together to create a joint product which, according to their perspectives, afforded multiple levels of interaction. Not only did they see their learning in terms of the meaningful use of the media, but they also valued the various forms in which they were able to experience learning (with different media and within different groups – each offering a distinct “expression of the theme”).

From Level Two of the hierarchy, the action level, it is also clear that there was more dynamic involvement in carrying out the goal. In their acts, they applied what they learned in a practical way and, while they were not specifically trace language development, there are hints that they saw themselves practising their media skills and acting together to do so. It is at this level that the role of language from a sociocultural perspective can best be identified as a mediational means – the artefact which enables them to function as a unit to achieve their goal.

Here too, the role of context as an enabler of social interaction can be acknowledged. By having to work with each other in this constellation, pupils spoke more as a group with a singular and, at the same time, plural voice – “**we** could practice more how to present things in a good way”, even when asked for their individual views on the experience.

Finally, it is at the operational level that the conditions which impact positively on the learning experience can again be emphasised. There is clear agreement on the part of the pupils that the social form in which they worked was the preferred form. Not only was there an affirmation of the “free” and “different” manner in which they were able to work, but there was no critique lodged against working jointly. As will be discussed later on, there is evidence to suggest that pupils see some measure of indispensability in working in this way, if the ultimate outcome is to learn in a context which provides genuine opportunities for mutual support (see Figure 7.7).

Figure 7.7 The AS of the one-CALL classroom as defined in Case Study One based on Engeström's model amplifying interaction at the AC



7.4.1 Focusing on the computer in its social function

As previously detailed, in order to provide a comprehensive analysis of the data collected as pupils worked around the computer, the emic perspective of the interaction will first be presented. The perception of the pupils, based on the interviews prior to and following the project, will then be corroborated by observation notes on the video protocols.

7.4.1.1 Pupils' general perceptions on the use of the computer in the classroom

As in the case of the Pilot Study, volunteers from among the pupils were asked to share their experience and views on the use of media in the classroom. In this case study, three pupils were willing to offer their views prior to the study.

In describing the way in which she worked at the computer in a previous class, the first pupil offered a few reasons for which she thought it "good if you have a computer".

One of the first reasons she offered is that "we have done it together". To support this view, she described the set-up with one person typing and the rest of the group contributing.

She also added that it is easier in that the work produced is "orderly" and "looks better". In terms of logistics, she suggested that it is not necessary for each pupil to have a computer as there is literally not enough space within the classroom and that at least one computer for each class would be enough.

This view of logistics was taken up by a second pupil who had worked previously with a few computers in an English class for presentations in which no digital projector was available and so they gathered around the available computers in the group. Despite this logistic challenge, this pupil admitted that it was easier for him as the use of the computer made up to some extent for the fact that he cannot speak English well: "And to work at the computer was easier and to present, and to present to the class, yes, was easy too…You don't have to talk all the time freely, sometimes you can read".

What can be observed here, is a distinction and, at the same time, complement between the computer as a tool influencing the learning process in Meskill's (2005a) terms (see Section 2.2.1) and the computer in its social function.

In the first pupil's response there was reference to learning as supported by the group effort as they were able to work within a collaborative space at the computer (in a social constellation). At the same time, she also hints at the specific features of the computer which made it an efficient medium in terms of its visual effect.

In the case of the second pupil, the social function was defined in terms of the way in which the computer supported his oral presentation and supplemented, as it were, his speaking skills. For him, the computer also served efficiently in terms of the actual visual presentation: "You can click and the points come step by step."

These understandings are further emphasised by a third pupil who related his experience concerning the use of the computer. This pupil offered some specifics concerning the sensible use of the computer, suggesting not only that it is easier to use and that PowerPoint, for example, is appropriate for presentations, but that "it is better for a big project and not just two or three points you have to say". Here, the emphasis is efficiency in terms of integrating the computer among other classroom artefacts "just when you really need it for presentations, not every lesson"; in the very way in which Bax (2003, 2011a) defines the process of "normalisation" (see Section 2.3.1).

7.4.1.2 Pupils' perceptions on the use of the computer in the integrated CALL classroom

As previously detailed, in order to provide a comprehensive analysis of the data collected as pupils worked around the computer, the emic perspective of the interaction will first be presented, before examining the interaction from an etic perspective based on observation notes on the video protocols.

The perceptions of the pupils, based on the interviews conducted with them following the project, revealed three key features of the interaction which also fall in line with their general perceptions of the use of the computer (see Section 7.4.1.1).

These were: the shared experience, the useful medium and the supportive medium.

Pupils perceived working around the computer as a *shared experience* in that they made no clear distinction between their tasks. In response to the question of who prepared the presentation, pupils did not specify how the task was sub-divided among the members of the group, rather, they clearly stated that "**we all** did it." This reference to a combined effort is reminiscent of Teasley and Rochelle's (cited in Storch, 2002) terminology "joint problem space" in which the mutuality of the engagement is clearly evident.

This description of a shared experience also comes across in the pupils' attempts to detail the process of constructing the presentation itself in which they emphasise the way in which they brought together their ideas as a group through interchanging, complementing and deciding together.

This evidence of collaborative learning perceived by the pupils demonstrates a sociocultural understanding of knowledge as a co-constructed effort. This is further corroborated by an observation of the interaction around the computer.

As the research at this juncture focused in more closely on the AC of the CALL scenario, the elements representing the mediational means facilitating the interaction and their social roles would become more clearly evident.This meant that the role of the material and symbolic artefacts, as constituent parts of the context could be more closely examined in relation to their impact on the learning experience.

7.5 An Activity Theory perspective of social interplay

Defined on the basis of AT, it can be safely said that in acting upon the object, that is, creating a joint presentation as a step toward achieving their outcome as language learners (being able to produce a structured document to support an oral delivery), the pupils were engaged in a genuine process of co-constructing their language product. These affordances facilitated by the computer demonstrate the nature of the social function which it plays and contributes to the formulation of CALL texts which define the specifics of the interaction in this particular scenario based on the descriptors coming out of the data (see Table 18).

Table 18 A summary of the descriptors and CALL texts (based on Chapelle, 2000: 208) denominating the interaction in the one-CALL classroom

Perceptions of the computer in its social function	
Descriptors Social/Mediational function	CALL text
Facilitating a shared experience	"*We think about some headlines… We all "abwechseln" (interchanging). We haven't got a typist. We just made it. We said…"* *"We did it. We all say…Everybody say something. We can ergänzen (complement)."* *"We just decided together on which colours we should use and what special effects."* *" Wir haben zusammen überlegt…In der Arbeit haben wir nicht unseren eigenen Teil gemacht, sondern zusammen gearbeitet. (We thought about it together. During the task we didn't do our own part, we worked together."*

Efficient medium (Tool – Meskill, 2005a)	*"It is useful for big projects…You can show pictures, keywords, short movies and sounds."* *"Meaningful by using films or music – then it will make sense... It's good to have the option, but not so that it's a rule to use it."* *"More interesting than the poster transparencies…pictures, colours."* *"It's more fun, interesting, easier."* *"Good if you have to write texts, presentations, maybe go on the internet."* *"Ist auch wichtige heutzutage mit dem Computer umgehen zu können. (It's important nowadays to be able to manage the computer)."* *"You can read it very good."*
Supportive medium (Social function)	*"And to work at the computer was easier and to present, and to present it to the class, yes, was easy too"* *"You can understand a lot…have a good "Überblick"(overview)."* *"[From] notes on paper; I write it again, so I can remember better."* *"Anderen haben gesehen was man gemacht hat"(Others saw what one did).*

These texts, therefore, serve to clarify the descriptors in order to make their location and impact within the AS explicit as will be further elaborated on later in this chapter.

7.5.1 Corroborating interaction around the computer as a shared experience

As clarified in Section 5.2.4, the value of freezing moments of interaction can serve as a valid source of triangulating the data in that it provides an additional basis upon which to define the engagement of the participants.

Based on a detailed analysis of the video protocols and the accompanying observation notes, the descriptors identified from the pupils' perceptions of the interaction could be corroborated.

Firstly, it could be seen that pupils continually encouraged each other to participate in the decision-making process. In the following extracts, it was observable that the three pupils working on their presentation engaged in bids for contributions and confirmations in deciding on both the layout and content:

Stud. 2: Mach man Design, ne?
((Explores the programme with the mouse))
Stud. 1: Willst du Design?
Stud. 2: Ja, dann haben wir…Ich find es aber süß …
Stud. 1: … O.K. ((Slightly giggles))
Stud. 2: ((Begins to explore with the arrow keys))

Computer drop down menu displays possible background format and Stud. 2 continues to scroll through the designs with the arrow keys

Stud. 2: ... Welches nehmen wir?
Stud. 1. … ((Points at screen, makes a suggestion, confers with Stud. 2 and then with Stud. 3))
Stud. 2: ... ((Conferring with Stud. 3))
Stud. 2: It's O.K.

In the above extract, the same collective tone noted in the pupils' interviews which bore evidence of a shared experience could be identified. This can be seen when the question of which design the group, that is "we", selects is posed by one pupil who makes way for the others to make an equal input.

In the following extract a further episode in this sequence further supports the shared experience in which the pupils are engaged:

Stud. 3: 'Uh'. My son the fanatic. Ne? ((Reading from paper))
Stud. 1: 'umhum' ((Begins to type))
Stud. 2: Ein Fanatiker oder so…
((Points at screen to indicate error))
Stud. 1: Hmm?
((Deletes and retypes))
Stud. 2: Was heißt dann *Leerzeichen*?
Stud. 1: Es heißt *Space*.
Stud. 2: *Space. Space*?
Stud. 3(?): 'umhum'

This brief episode demonstrates the way in which pupils consult closely not just on the content of the slide, but also in a brief instant, on language as well.

Finally, the pupils agree on adjustments by seeking confirmation of their suggestions and in clear echo:

Stud. 2: Maybe *Ali*. ((Pointing at screen))
Stud. 1: 'Mmmm' ((Nodding affirmatively))
Stud. 1: Gefällt dir…No?
Stud. 2: Bigger.
Stud. 3 : Bigger.
Stud. 2: 'Hmm'
Stud. 2: Bigger. ((Deletes and retypes))
Stud. 1: More?
Stud. 2: More.
Stud. 1: O.K.?
Stud. 3: 'Mmm' ((Affirming))
Stud. 2: O.K.

[Excerpts from Case Study One – Video Protocol] (see Appendix 17 – Corroborative analysis of critical friend).

These three instances or "moments" of collaboration in the interaction highlight the form of mediation which is facilitated and what has been denominated as constituting a shared experience in this constellation. This understanding of the latter descriptor is also confirmed by the observation notes to this video extract where the intensity of the interaction between pupils and the computer in its social function is brought into focus:

> *In selecting the layout of the slide and its content, the pupils confer with each other and focus intensely on what appears on the screen. The level of concentration is very high as can be seen when one of the pupils instinctively takes over control of the actions on the screen by using the arrow keys with no obvious interruption and relinquishes her control after a few seconds almost unnoticed. When questions are posed, eye-contact and body language show an opening up of the communication which emphasises what can be interpreted as the genuineness of the request for input.*

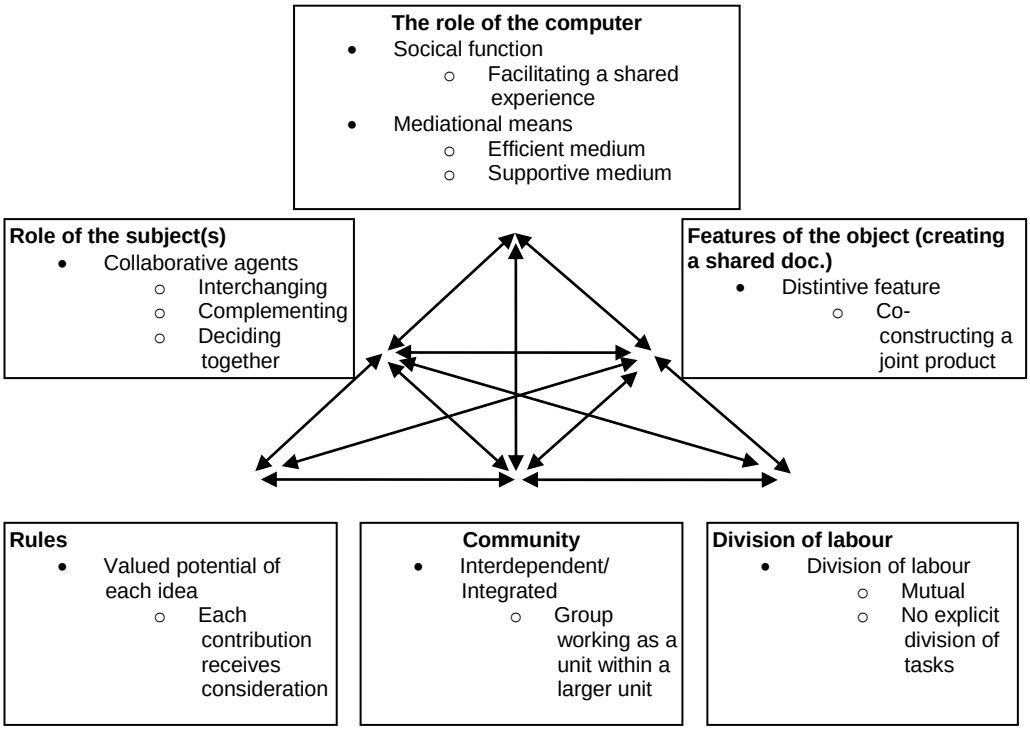
[Excerpt from Case Study One – Observation Notes].

7.5.2 Defining effective learning conditions from an AT perspective

In order to determine in which way the learning experience can be said to facilitate effective learning conditions, the descriptors identified in the data will be examined on the basis of the AT framework and juxtaposed with Hubbard's (2009) definition of "learning improvement" in CALL.

Figure 7.8 offers an applied view of the descriptors as they represent the learning process within the AS in which the Case Study One was carried out.

Figure 7.8 Locating the descriptors characterising the AS of an integrated CALL classroom – Case Study One



These descriptors, which elucidate the interplay between the subjects, the mediational means and the object of this learning scenario as supported by the rules, community structure and division of labour, are reminiscent of Hubbard's (2009) interpretation of "learning improvement" (see Section 6.2).

While Hubbard's classifications of improving conditions for learning represent an interpretation of the affordances offered principally in networked-based environments, these categories can be adapted for the face-to-face CALL environment as well. Within the context of this study, Hubbard's (2009) classifications of learning efficiency, learning effectiveness, access, convenience, motivation and institutional efficiency, therefore, take on a somewhat new dimension, whereby the latter two remain applicable in their original form. Within the AS of an integrated CALL classroom, and as seen in the previously

formulated CALL texts above, the first four classifications can be redefined and expanded as follows:

- Learning efficiency: learners are able to produce or represent their knowledge and /or application of language in a clear, finished (professional) and structured form for easy “readability” and sharing;
- Learning effectiveness: Learners are enabled to engage in a meaningful collaborative space which increases the potential for the co-construction of language products;
- Access: Learners make use of media which allow them to manipulate, create and/or share language products or experience interaction in a unique triadic social constellation in which both material and symbolic artefacts work to mediate the interaction;
- Convenience: Learners all have access to a variety of media which allow them to work in different forms and with greater flexibility.

Examined in detail, it can be said that the learners in this integrated CALL classroom experienced learning efficiency in the sense that they worked with material and symbolic artefacts which allowed them to represent their interpretation of the texts and themes which they worked with in a clear and structured form.

In terms of learning effectiveness, it can be seen that the goal of the learners, which would lead to the outcome of being able to produce a structured presentation, was optimally facilitated. Not only did the specific features of the programme (PowerPoint) give pupils the chance to cohesively create their product with the option of continuously editing and redesigning their document, but they were also able to engage in meaningful collaboration.

This collaboration was made accessible within the unique AC afforded by the triad of subjects, mediational means and object as they intertwined to achieve the learning outcome.

The convenience offered by the flexibility of the classroom set-up was also a feature acknowledged as contributing positively to this integrated CALL classroom. The pupils not only had the initial option of working with the computer or another type of media, but they were also given a chance to collaborate within their group in a way which, as evidenced by the data, facilitated the creation of a truly “joint” product.

In classifying this specific CALL context, Bax (2003) suggests that students are able to interact with each other as well as with the computer. He further suggests that it can function both as a tool and as adapted to the particular needs of the students. This implies a degree of flexibility of the nature described above.

In this sense, this scenario, therefore, approximates what Chambers and Bax (2006) define more specifically as a state of "normalisation" (see Section 2.3.1).

On the level of motivation, it was also seen that this learning scenario did offer a certain degree of enjoyment in which the pupils saw working with the computer as fun and as an alternative to more traditional types of media.

Hubbard's (2009) final aspect related to improving learning, that of institutional efficiency, speaks directly to the key focus of this research endeavour. As alluded to in Chapter One, making a case for deliberately limiting the number of computers in the classroom can be substantiated if, by so doing, the effectiveness of the use of the computer stays in focus.

In this Case Study, the specific aim of integrating one computer into the classroom scenario in an effective way, therefore can be said to have been achieved to the extent described above.

7.6 Conclusion

As specified in Section 5.2.2, the main objective of the case study presented in this chapter was to define the interaction of this integrated CALL classroom with the ultimate goal of determining the extent to which it can be said to improve conditions for learning, particularly with regard to the effective use of the computer.

In order to arrive at an answer to the research questions, based mainly on the perceptions of the learners and as considered from the perspective of AT, the data were analysed on several levels, as elaborated on in the introduction to this chapter.

From the data and in direct response to the afore-mentioned question, it was ascertained that

- interaction can be defined in terms of learning as a shared experience and with the computer as a mediational means bearing a social function;
- interaction takes place at the level of collaboration with peers as "streamlined" by the computer;

- the use of the computer as an integrated artefact can contribute to some extent to learning efficiency, learning effectiveness, access, convenience, motivation and institutional efficiency; and
- from an AT perspective, the features of this AS represent interaction in a unique constellation which allows for the exploitation of the social function of the computer.

This chapter also presented a number of CALL texts (Chapelle, 2000) which indicated the way in which so-called triadic interaction (an issue more fully elaborated on in Chapter Nine and picked up again in Chapter 10) can be more precisely defined.

The following chapter, therefore, not only makes a further contribution to detailing this interaction, but to responding directly to the question of the roles which learners see themselves assuming in the integrated CALL context.

8 Student roles in the one-CALL context

A presentation and discussion of the research findings of Case Study Two as they relate to issues inherent in Research Question Three and as seen from the AT perspective

8.1 Introduction

Research examining the roles pupils assume in interaction has considered these roles in relation to the way in which they can serve language development. Storch (2002), for example, defined these roles in terms of "patterns of interaction" and, consequently, identified four patterns in pair interaction: Collaborative, Dominant/Dominant, Dominant/Passive and Expert/Novice. In her research, she found collaborative pairs to be predominant among those which engaged in interaction in which the co-construction of knowledge was evident.

While understanding such patterns is significant to the extent that it leads practitioners to consider more carefully the social structure of the classroom, a closer look at the features of the learning environment which facilitate collaboration and elucidate the precise roles which pupils assume in this constellation can complement this latter benefit of investigating interaction in the language classroom and more specifically in the CALL classroom.

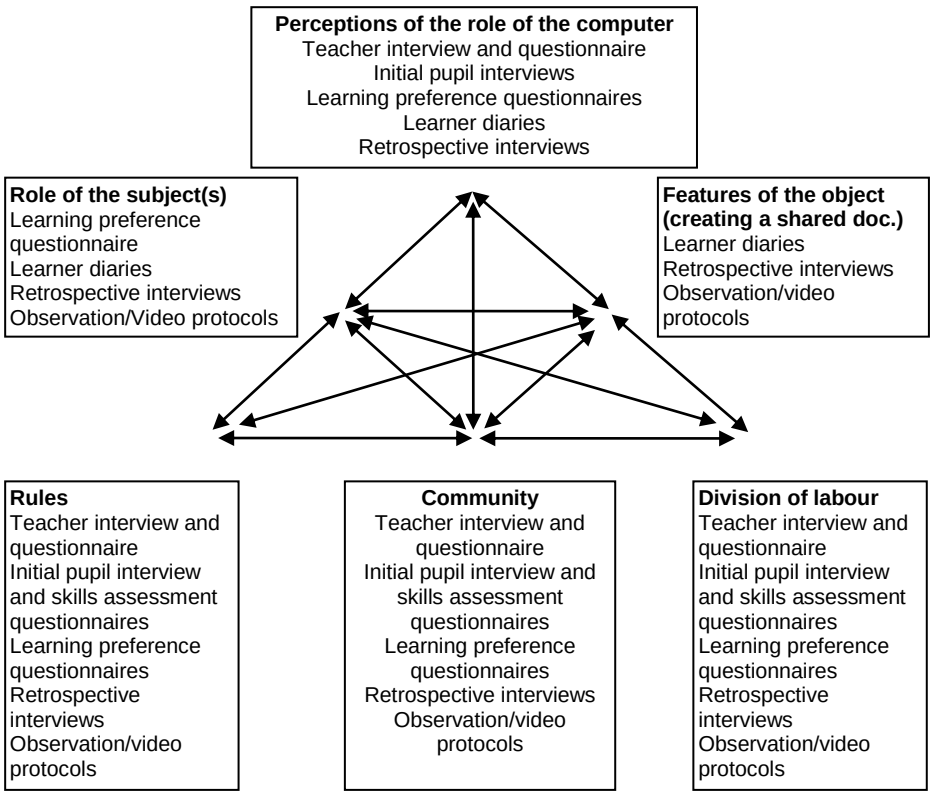
In an attempt to further elaborate on this question of the ways in which interaction in an integrated CALL classroom can be linked to improving learning conditions, as was addressed in Case Study One, a second case study was designed. In Case Study Two, and as mentioned above, the focus was on the nature of interaction in terms of how the pupils related to each other and the extent to which the interaction in this integrated CALL constellation can be considered to be at the level of collaboration. As in Case Study One, a background to the research context is first presented, following which a profile of the learners and the social structure of the classroom are established. This was deemed important in order to make clear the ways in which the context of this case study is comparable to as well as how it distinguishes itself from the previous one.

An overview of both pupil and teacher perceptions of language learning in general and the role and function of the computer in particular is then provided, with the explicit purpose of zeroing in on the issue of the roles pupils play or are expected to play in interaction at the AC. The ultimate goal of an examination of these perceptions would, therefore, be to determine the extent to which pupils' roles

might be said to be indicative of and impact on genuine collaboration, as defined above.

The data coming out of these perceptions will then be triangulated with examples of “frozen moments” of interaction and analysed within the framework of AT (see Figure 8.1)

Figure 8.1 Overview of data triangulation process leading to the identification of roles within a one-CALL classroom AS – Case Study Two



This chapter will then conclude with a summary addressing the key elements of collaboration identified in the interaction.

8.2 Background: A project summary

In February 2004, I established my first contact with a French teacher at a grammar school in Trinidad and Tobago who had worked with me on a previous study on the extent to which computer technology was being adopted within the school system and how this could be further supported. The results of this study demonstrated that one of the key facilitators of this process was the vision held,

not only by the teachers, but also at the administrative level (Yearwood, 2004). As this school was among those whose principal had expressed a clear vision of seeing her pupils benefit from the appropriate use of the computer and having it integrated into the school curriculum, it presented itself as a suitable site to further investigate the use of the computer in the classroom. Although it would take almost another year before we could actually begin our cooperation, there was a clear show of interest in the research objective.

The fact that the official language in Trinidad and Tobago is English meant that the pupils in this study would be learners of French as a foreign language, the foreign language taught at secondary school alongside Spanish. This, therefore, made it possible to investigate the question of the meaningful use of technology in another sociocultural and linguistic context.

As I also became aware, the principal of this school had, early in 2004, participated in a learning mission to Japan and Singapore (a training initiative organised by the Inter-American Development Bank) entitled “Computers in education: Sustainable and effective use”. This experience had had a clearly positive impact and had inspired her to conduct a needs analysis survey among the staff and students and make a proposal to the Ministry of Education for the creation of an ICT environment. The main goal of this “infusion” of ICT would be “to promote the use of ICT and the Internet as an integral part of the teaching and learning process in order to produce a ‘Life-long Learner’ who is technologically literate” (McIntosh, 2004: 7).

One important aspect of this report, prepared by the principal herself, which reflected her vision and which has specific relevance to this present research is the deliberate decision made to opt for a “modest” or “classroom” setting variant of this proposed ICT environment in which teachers would have access to a laptop, a multimedia projector and a screen. One specific reason for this choice, presented in the above-mentioned report is stated as follows:

“The expansion of this project, in which the equipment is portable, would address the worrisome issue of scheduling – that would arise in the laboratory setting – thereby availing the technology to a greater percentage of the student body.” (McIntosh, 2004: 5). While Chambers and Bax (2006) allude to the issue of “anchoring” the technology into the classroom space as a possible means of offering greater potential to the normalisation of CALL, the view expressed by the

principal focused less on this aspect of logistics in terms of physical location and more clearly on the simple flexible availability of the technology and the meaningful use to which it can be put in this so-called “classroom setting” which she had experienced during the learning mission:

“**Classroom settings** where teachers used basic technology along with smart pedagogical practice to facilitate the learning process. In many such instances, a laptop computer for use by the teacher, a multimedia projector and screen were the only equipment used in the delivery process. Students gathered information through exposure to the powerful visual effects of CD-ROMs and the Internet and constructed knowledge through collaborative group work where they engaged in experimentation, discussion and exchange of ideas.” (McIntosh, 2004: 4 – bold typeset in original).

Despite having also witnessed the use of computer labs, as stated above and as further expressed in the report, she articulated her expressed preference for the “classroom setting”, that is, a classroom which can be outfitted with a laptop and a multimedia projector at any time, as “a modest beginning that calls for basic technology [which] will facilitate the introductory phase by ‘softening’ the challenge and allowing teachers and administrators to grow with the technology” (McIntosh, 2004: 4).

Her conviction and proposals resulted in the school acquiring 16 laptops, an initial two portable digital projectors and three screens.

It is on this very basis that not only the principal, but also the French teacher whom I contacted were quite willing to be involved in working with the computer in the classroom. Participating in the research project would also be an important “partnership” for the French Department, which had only been considered to participate in a pilot phase of the implementation of ICT process after expressing disappointment that the Spanish department had at first been selected by the principal to play a pivotal role in the initiative. This meant that the teachers were motivated and it was a welcome development that by the start of the project, a second teacher had also shown her interest in taking part.

In short, it can be said that the choice of this school as an appropriate context for the research was related to the fact that although the school also had two computer laboratories, there was a decisive focus on specifically opting for a limited number of computers in favour of meaningful and potentially more

extensive use of the technology. This is reminiscent of Bax's (2003) definition of the position of the computer in the context of what he refers to as integrated CALL, that is, "in every classroom" as one step in the normalisation of CALL. Additionally, as argued in Chapter One, it situates this school as representing a limited technology environment defined in terms of availability – with limited access possibilities on a logistic level – but one which was aspiring toward a flipped version of this limited technology label since there was a conscious decision being made to limit the number of computers to exploit its potential for effective use.

As noted above, although the initial contact was already made early in 2004, the project planning and execution took place one year later when funding became available.

During our first formal planning session, which took the form of a telephone conversation, the French teacher, whom I had initially contacted (Teacher One), who had indicated in one of our previous email exchanges that she would give some thought to which particular skills she could see being addressed within the project, suggested that she could imagine the pupils doing some kind of presentation in which they show and share their ability to distinguish between various question types. This, according to the teacher, would fall in line with the requirements to be met by pupils in her component of the French course, that is, the literature class. As she had explained, the pupils normally have difficulty with determining the angle from which to approach a question:

> *"…they cannot take the information and sift through what is relevant and answer the question…I really want them to work on analysing that question and finding out what exactly the question is asking…That is the skill I want them to acquire."*
>
> [Excerpt from Case Study Two – Transcribed telephone conversation with French Teacher (Teacher One), 18.01.05].

In consultation with the second French teacher who had also shown an interest in the project (Teacher Two), it had been agreed that pupils from her group would also benefit from looking into strategies for responding more precisely to questions based on literary texts. In a document which she had prepared to articulate her statement of the problem, define the task and set a task objective, she articulated the former as follows:

> *"Students do not understand what depth of analysis is expected when certain key words are used. They, therefore, do not respond adequately and sometimes even accurately to questions containing these key words since they seemingly have difficulty understanding what the words are asking of them and what type of information is implicit in the question."*
>
> [Excerpt from Case Study Two – Personal documentation, Teacher Two, 22.02.05].

Based on these reflections as well as on the fact that doing a presentation was understood to mean creating a document with Microsoft Office PowerPoint, once we had agreed on the dates and the timeframe, namely, a six-week period – the time available for me to conduct an overseas project – I proposed a schedule with specific pedagogical and research objectives (see Table 19). The proposal was well received by the teachers who also indicated that it would also make sense to do the project outside of classtime to avoid administrative complications and that in the case of the pupils in Teacher Two's class, participation would be on a voluntary basis.

It was also agreed that the tasks would be defined with a complementary focus, namely, to allow both groups to present to each and at the same time benefit from each others' work.

This would not only create a meaningful goal for the task, but also create an authentic cooperative context for both groups as little opportunity is normally available for both levels to share a learning experience within the taught curriculum.

Table 19

Overview of project phases, associated tasks and areas of research focus – Case Study Two			
Phase	Task/Pedagogical objective	Research objective	Interactional focus
Pre-project (Week 1) Interview	To determine pupils' views on language learning and the use of the computer	To establish a profile of the participants and an understanding of the community composition	Pupils share their initial perceptions with the researcher
Workshop on PowerPoint	To provide the background that pupils would need to be able to successfully prepare their presentations	To gain pupils' confidence and fit into the environment as a member of the group	Pupils have the chance to pose questions to the teacher and the researcher during the workshop
Preparation (Weeks 2 – 4) Discussion/ Organization	To give pupils the chance to determine how they will approach the task	To observe and investigate pupil interaction as they organise the way in which they will prepare their presentations	Oral exchange
Preparation of presentations	To give pupils the opportunity to reflect on, formulate and format their presentations	To observe and investigate pupil interaction and learning experience as they prepare their presentations	Pupil preparation of presentation documents
Presentation (Week 5) Presentations	To allow pupils to demonstrate their skills in selecting salient and relevant points and present them in a structured manner	To allow students to demonstrate the way in which their presentation represents a joint product	Presentation documents as visual support

Evaluation (Week 6) Project evaluation	To allow pupils to reflect on the project and give explicit evidence about the extent to which it constituted a shared learning experience	To interview the pupils in order to determine how pupils perceived their own roles within the interaction	Pupils share their final perceptions with the researcher

8.2.1 Profile overview of the participants

The groups participating in this six-week research project between February and March 2005 were, therefore, two groups of Advanced Level (A Level) pupils.

Group One consisted of the only four pupils making up the French Upper Six class (the class name given to pupils in their second and final year of the A-Level studies programme at the secondary school level in Trinidad and Tobago). These pupils would, therefore, have completed five years of lower secondary school education as well as the first year of their A-Level programme in preparation for the UK-based Cambridge General Certificate of Education examination.

This examination consisted of four components: Speaking (20%), Reading and Writing (35%), Essay (15%) and Texts [literature] (30%), each graded based on a criteria grid. Pupils were required to produce responses for all questions in French, though for the literature component, linguistic errors which would not impede comprehension would be ignored.

Group Two, on the other hand, was made up of four of the 11 members of the Lower Six class (the class name given to pupils in their first year of the A-Level programme) who expressed their willingness to participate in the project.

These pupils, however, were preparing for the Caribbean Examinations Council's Caribbean Advanced Proficiency Examination [CAPE] (comparable to its UK-based predecessor which was being phased out in all A-Level programmes in the country).

The French syllabus for the CAPE required pupils to sit five distinct exams: Three externally assessed – listening comprehension (25%), reading and essay writing (25%), literary extracts and themes (30%) and two internally assessed – oral and written assignment (20%). In some question types in the listening and reading tasks, pupils are required to respond in English based on material provided in

French or in English to questions in English (for example, explaining idiomatic expressions). In all other question types, however, the language of production is French.

As the project partners were the literature teachers of these groups, the task would be designed around skills which the pupils required specifically for working with literary texts.

In order to get an overview of the social profile of these pupils which would be relevant to the research objective of this case study (see Section 5.2.2), that is, drawing on an understanding of their established, expected and observed roles, self-assessment questionnaires issued to these participants, were examined with the precise objective of identifying designated roles. This would lead further to the establishment of a "community" profile of the AS of these groups and, in so doing, as in Case Study One, offer understandings of the connection between Level Three of the AS and the interaction at the AC.

8.2.1.1 Established and expected roles

In Case Study One, the results of the questionnaires issued to the pupils together with the teachers' reflections on their ideas and approach to language teaching provided evidence of a relatively balanced group profile at Level Three of the AS (see Figure 7.5).

In this present case study, however, in order to focus more closely on the issue of roles, that is, those established within the groups and other emergen expected roles, the data were analysed to specifically identify such indicators.

Firstly, it should be noted that overall there was no clear distinction in the way the groups in Case Studies One and Two assessed their language skills. In both groups in Case Study Two, for example, pupils assessed their levels in each skill primarily between average and high.

Additionally, in the area of using the computer, the only medium with which pupils would be confronted during the project, there was also a balanced range of skills – from average to very high.

Similarly, and with respect to the question of their social skills which, as mentioned, constituted the focus of the analysis, pupils assessed themselves along the upper range. This meant that the groups in this case study could equally

be considered to be operating within a balanced unit as that defined for the class in Case Study One (see Section 7.2.1.1).

The items in the questionnaire which formed the basis of the present analysis, therefore, were those which asked pupils to indicate their skill levels in coordinating activities within a group, doing research and doing their part in a group activity. Defined in terms of roles, they were, in effect, asked to indicate their skills as coordinator, researcher and individual contributor – the basic roles they would be expected to perform as they worked together on the CALL activity. Figure 8.2 and Figure 8.3 summarise the pupils' self-assessment:

Figure 8.2 Pupils' self-assessment of their social skills in the classroom – Case Study Two, Group 1

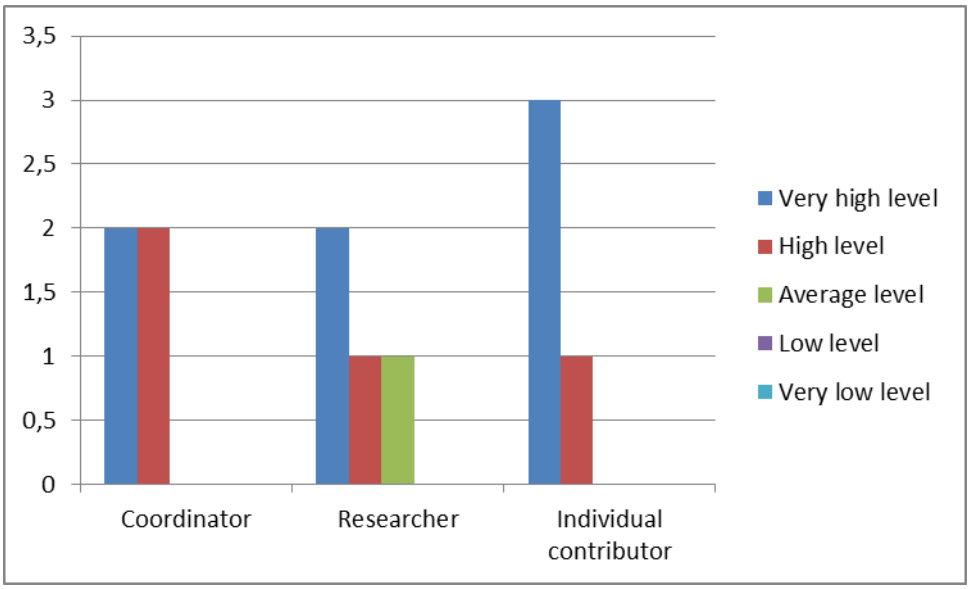
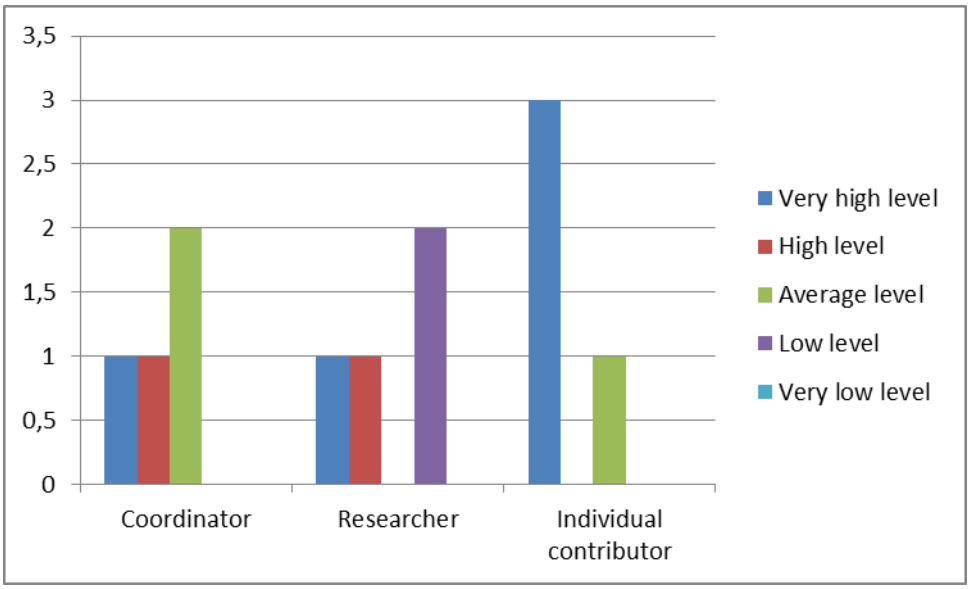


Figure 8.3 Pupils' self-assessment of their social skills in the classroom – Case Study Two, Group 2



As can be determined from this spread, within each group pupils defined themselves as mastering at least one of the three roles of coordinator, researcher or individual contributor at a high level. This is again reflective of the potential supportive role which the group constellation offered.

This understanding of the perceptions of the pupils was corroborated by pupils' response to where their particular strength and weakness lie. Whereas, in Group One, this even spread was reconfirmed, there was a clear overlap in Group Two of pupils identifying their specific strength as individual contributors. Two comments stood out, however, in the comments on pupils' area of weakness.

In Group One, one pupil identified the following as a weakness: "I usually treat projects as individual assignments because I believe if you want something done well, do it yourself." In a similar fashion, one pupil in Group Two stated: "[In a group activity, I am weak at] working with others. I prefer to do research and everything else on my own".

These latter comments, in particular, allude to a disparate, yet balanced classification of established as well as expected roles. While pupils were able to locate their skill levels in each of the established role categories, they were also able to identify where their own personal perceptions of these roles deviated from those established for working together with others.

By classifying this preference to work on their own as a “weakness”, they were actually expressing their awareness or understanding of how their preference deviated from the norm or “expected” role of learners within their learning group, that is, as required in order to work together with their classmates in group work activities.

8.2.1.2 Participant perceptions of the social context of learning

These roles defined by pupils in the context of their assessment of their social skills were further complemented by those they defined in the learning preference questionnaire.

It should be noted that this questionnaire was distributed to both the classes at the beginning of the project, including those from the Lower Six class who would not eventually participate in the CALL activity. This was thought to be important in order to provide a complete picture of the views of the class as a whole.

In terms of the overview provided by the 12 pupils who were present on the first day and who provided their ideas regarding learning French it can be seen that either pupils saw learning French, on the one hand, as a “great” or “interesting” experience, or on the other hand, as a mainly “challenging” and somewhat “daunting” experience.

One key reason for this divide between these two views became evident in pupils’ responses to when they enjoyed and did not enjoy French class. In most cases, pupils provided a response related to the use of language in the classroom, whether in reference to the degree to which they understand or to which the teacher provides an explanation in L1 or L2. This is unlike the tendency in the previous case study, where enjoyment or lack of it was more clearly affected by the social form of learning within the group. In this present case study, there was no clear preference for a particular social form of learning as working individually, in small groups or as a whole class were fairly evenly preferred among members of both classes. However, pupils made explicit reference to their preference for the use of L1 in specific cases, for example in the context of the literature class. As it was the sessions related to the literature part of the course within which the research was being conducted, it can be assumed that pupils seemed to be making more specific reference to learning in this particular class.

This suggests further that in terms of the social context, pupils seemed to be comfortable once the language selected (L1 or L2) was appropriate to cope with the nature or demands of the task. This may also be related to the fact that, at least in the case of the Lower Six class, pupils are expected to use their L1 (in this case, English) to respond to questions about language, for example, in their final exam and have been so oriented.

This place ascribed to L1 in the classroom can be seen in the following extracts from the questionnaire:

> *"I enjoy French class when the teacher explains everything we need to know in English and gives us key words in French."*
>
> *"I enjoy French class when I understand what is going on and can contribute my opinion."*
>
> *"I do not enjoy French class when I am at a loss as to what is going on."*

This was also evident in their views on what they thought was the best way to learn French in class.

> *[What do you think is the best way to learn French in class?]*
>
> *"By speaking French only when necessary."*
>
> *"Speaking in English, except in oral class, and get needed vocabulary in French from teachers."*
>
> *"In literature class, chapters should be assigned, class discussion in English to maximize the time."*

[Excerpts from Case Study Two – Learning Preference questionnaire] (see Appendix 18 for sample Learning Preference questionnaires – Case Study Two and Appendix 19 for Corroborative analysis of critical friend).

This particular feeling of 'comfort' when using the L1 in the language classroom, though seemingly averse to the concept of foreign language learning, has been seen as a medium of support (see Section 3.4.2.2) during the completion of certain types of tasks. Recently, Moore (2013) has added to this discussion by suggesting that the L1 is more likely to be used for "procedural", as opposed to "content-creation" activities. According to Moore (2013), his case study research further supports the view that the use of the L1 in the classroom is a naturally

evolving phenomenon and is not necessarily an indicator of the pedagogical value of the task in itself (Moore, 2013: 251).

This relates to the mediational function of the L1 in the sense that it facilitates completion of the task and forms part of the complex of contextual factors of which the AC is comprised.

Also implicit in the above views expressed by the pupils is the way in which pupils perceive the division of labour within this particular classroom system, which as suggested, is determined by and impacts on the specific outcome of the learning experience.

In this class, on the basis of literature texts, pupils are expected to engage in reflection on extracts and themes in order to be able to respond to essay questions. For them, the role of the teacher is to provide them with the explanations which in turn will facilitate their contributions to the discussion.

This further suggests that they see their role as somewhat of an assimilator and contributor who "is not at a loss" and "can contribute efficiently in the class" – in the words of the pupils.

This is reflected quite precisely in further responses to the question of the best way to learn French in class:

> *"…to have general and important keys and skills being taught by the teacher and also to have students being called upon to answer questions as opposed to questions being asked generally."*
>
> *"Collective learning must take place as well. Everyone should be willing to share her views."*
>
> *"I like the idea of brainstorming, working in pairs or small groups collaborating. Everyone can benefit from each other and it takes the pressure off one specific student."*

[Excerpts from Case Study Two – Learning Preference questionnaire].

The issue of "collective" learning and "collaborating" is also reflective of the balanced social context in which it was established that these pupils seem to be operating – one in which there is mutual support among learners. This can be assumed to be the case since the two pupils making these comments confirm that they have experienced learning French in this way.

From the perspective of the teachers, these somewhat established, and at the same time, expected roles of the teacher – "provider of knowledge" – and pupil – "assimilator of knowledge" were not verified.

The teachers saw themselves more in a facilitative role and articulated this in terms of offering a student-centered environment where pupils could experience language in a way which relates to their reality and which is fun and interesting.

> *"As a language teacher, my aim is to equip my students with functional knowledge of the language. My emphasis is on enjoying the language, while learning and being able to put it to use in an environment where French is spoken and not necessarily on teaching to pass an examination."*

[Excerpt from Case Study Two – Teacher Reflection questionnaire, Teacher One, 28.06.04].

> *"As a language teacher, my aim is to promote the language and culture…providing students with the opportunity to learn about, experience in different ways and appreciate another way of life."*

[Excerpt from Case Study Two – Teacher Reflection questionnaire, Teacher Two, 20.02.05].

Despite the fact that teachers aim to provide the learning experience described above, it was clear from the observation during two class sessions prior to the project that this is not the case in the Upper and Lower Six classes:

> *"In their class session today, the pupils were expected to respond to a question on the book 'La Rue Cases Nègres'. The teacher first read a passage in French, gave a brief explanation of what the intention of the question was and then proceeded in English to solicit ideas from the pupils. The pupils offered some responses after much prompting and after being offered key words and being asked to think of their responses in relation to specific issues they had discussed previously. She also prompted them word for word to then produce a coherent answer in French."*

[Excerpt from Case Study Two – Observation Notes (French Literature class, 17.02.05)].

It seems to be the case, however, that the literature class is not representative of the entire teaching experience, since as one of the teachers suggested in the pre-project interview, she is able to work with pictures, storybooks and charts especially in Form One (the first of the five years of lower secondary school).

This suggests that in the Lower and Upper Six classes where preparation for the final exam is in focus, the roles of both the teacher and the pupils fall more in line with those observed in the classroom reality and, at the same time, as expected by the pupils, as ascertained above.

In terms of the use of the computer in particular, pupils expressed a positive attitude toward its use within the classroom, based primarily on their personal experience so far. In addition to seeing it as a "helpful" medium for research and reference outside the classroom, within the social context of the classroom, some pupils also saw it as one of the best ways of learning French in the class:

> *[What do you think is the best way to learn French in class?]*
>
> *"Also, there should be some kind of visual display (computer) to make it fun."*
>
> *"1) using videos, computer…"*
>
> *"…By using more visuals (DVDs, videos, computers)"*
>
> *"Visual aids help also – like video and computer."*
>
> *"I think the best way to learn French in class is through the use of a computer because it would make the class more interactive and fun."*

[Excerpt from Case Study Two – Learning Preference questionnaire].

This latter reference is particularly interesting in the context of the research as it identifies the computer as a part of the interactive process which can occur within the class. In other words, the comment was used to affirm the positive value of the use of the computer in the classroom as it can serve to facilitate one of the established as well as expected roles of pupils, that of "cooperative partner" within the group.

This view was also supported by pupils' account of the way in which they had previously experienced the use of the computer.

In an interview with the pupils prior to the project, the members of one of the groups indicated having used one computer as a group to prepare for their trip to Guadeloupe.

With regard to the way in which the computer impacted on the social context of learning, pupils expressed a clear relation. According to the pupils, the computer enabled them to work "collectively":

> *"We collectedly, collectively decided what sites we wanted to go on…I think it was a very good opportunity, because it wasn't like one person dominating everybody else, but we did it together and ahm, it was really good because ahm, everybody had their part to play…,but we decided what we wanted to do together."*

[Excerpt from Case Study Two – Pre-project pupil interview].

This is consistent with the findings in Case Study One where a "shared experience" was perceived in a similar way and, consequently, was identified as contributing to improving conditions for learning by supporting learning effectiveness.

In the view of the teachers regarding the use of the computer in the classroom context, both seemed interested in using it – just like other media – to provide diversity, but were mindful of its meaningful use in terms of enriching the learning experience:

> "*My personal feeling about using the computer in the classroom is it is a very good idea, but must be done properly if it is to be of any real value. Class sizes must be addressed also."*

[Excerpt from Case Study Two – Teacher Reflection questionnaire, Teacher Two, 20.02.05].

> *"My personal feeling about using the computer in the classroom is that it is a breath of fresh air because talk and chalk are swiftly becoming a thing of the past. Our students are living in an age where soon in order to maintain their interest and get them to learn we will have to make use of the computer. The computer makes the French more real and alive than the textbooks and obviously is more in tune with my teaching style which is interactive…Finally I would like to add that I eagerly await the use of computers in the classroom."*

[Excerpt from Case Study Two – Teacher Reflection questionnaire, Teacher One, 28.06.04].

These comments reflect a realistic and clear appreciation for a number of what Chambers and Bax (2006) refer to as "significant issues in the normalisation of CALL" (Chambers & Bax, 2006: 477): logistics (class size), stakeholders' conceptions (talk and chalk – past; computer age; interactive teaching), and

syllabus and software integration (*must be done properly if it is to be of any real value*). They also indicate, in the face of establishing the use of the computer for real value, some recognition of the ways in which the nature of the classroom context might be required to change as well as how teachers might be expected to accommodate these changes. In other words, this awareness alludes to the fact that established and expected roles evolve and require new ways of acting.

This consciousness is also particularly relevant in the context of the research endeavor in the sense that integrating the computer into the classroom to the degree proposed by the principal of the school, for example, actually offers the chance for teachers and other stakeholders to become aware of the precise way in which the roles played by pupils, and consequently, the roles expected of teachers, might actually be affected by the computer as an integrated artefact.

8.2.1.3 Observed roles

In order to consider the significance of integrating the computer in a way which brings real value to the learning experience and to determine this value from the point of view of the roles evolving within the social interaction taking place, the pupils were observed during their interaction.

The observation of the interaction was divided into the activity preparation phase (off-computer) and the document preparation phase (on-computer). These two phases were “isolated” in order to focus, in the former case, precisely on the nature of the interaction among the subjects and, in the latter case, on the nature of the triadic interaction, that is, among the subjects acting on the object, with the computer in its social function – as established and defined in Case Study One.

8.2.1.4 Subject-subject roles

During the observation of the pupils’ (off-computer) preparatory sessions, it could be noted that pupils assume distinct roles in direct relation to each other or to the task at hand. This seems to be evident in the way in which they address the group either as a unit or simply as individual members.

In Group Two’s planning session, for example, this can be seen in the form of address which pupils use with each other.

The following extract from the audio transcription of the interaction provides evidence of the roles pupils assume as evidenced by their form of address:

Stud. D: **(1)** You want to use the dictionary?
Stud. K: **(2)** Yes, I don't know what them talking 'bout, 'bout the ahm, the internet.
Stud. D: **(3)** What all yuh going to do on the internet (*addressing Stud. T and Stud. R*)
(4) (*who had previously made the suggestion*)
Stud. K: **(5)** All yuh does, and what…suck milk from the internet.
Stud. D: **(6)** ((Touches Stud. K to indicate that she should calm down)).
Stud. K: **(7)** All yuh have to go to the library and get a French-French dictionary
Stud. D: **(8)** and a English dictionary
Stud. K: **(9)** and an English dictionary. I prefer to do that.
Stud. D: **(10)** What all yuh going to do? Where …?
Stud. T: **(11)** …
Stud. R: **(12)** ((Shows resignation by her hand movement)). Yeah, it have a French site.
Stud. D: **(13)** Maybe we should look in a dictionary 'cause some of those sites
(14) does give you wrong French.
Stud. K: **(15)** Exactly.
Stud. T: **(16)** The library has an all-French dictionary?
Stud. D & R: **(17)** Yes, it does (*simultaneously*)
Stud. T: **(18)** OK.
Stud. D: **(19)** So what we going to do? We'll go to the library now? (*addressing Stud. T*
(20) and Stud. R)
Stud. T: **(21)** Yes.
Stud. R: **(22)** We can't get the dictionaries and bring them here?
Stud. D: **(23)** No. We can't leave the library with the dictionaries.
(24) (*Someone makes a noise indicating dissatisfaction*)
Stud. R: **(25)** ((*Sigh)*) Yes.

[Excerpt from Case Study Two – Video Protocol] (see Appendix 20 – Corroborative analysis of critical friend).

In comparing the roles assumed by Student D and Student K, for example, it can be seen that Student D assumes the role of coordinator within the group, while Student K positions herself as an independent contributor.

In lines 1, 3 and 10, Student D questions each of the other members of the group on their particular preference in order to help the group decide for the internet or the dictionary – as there is not yet a consensus on which medium they should use for their research.

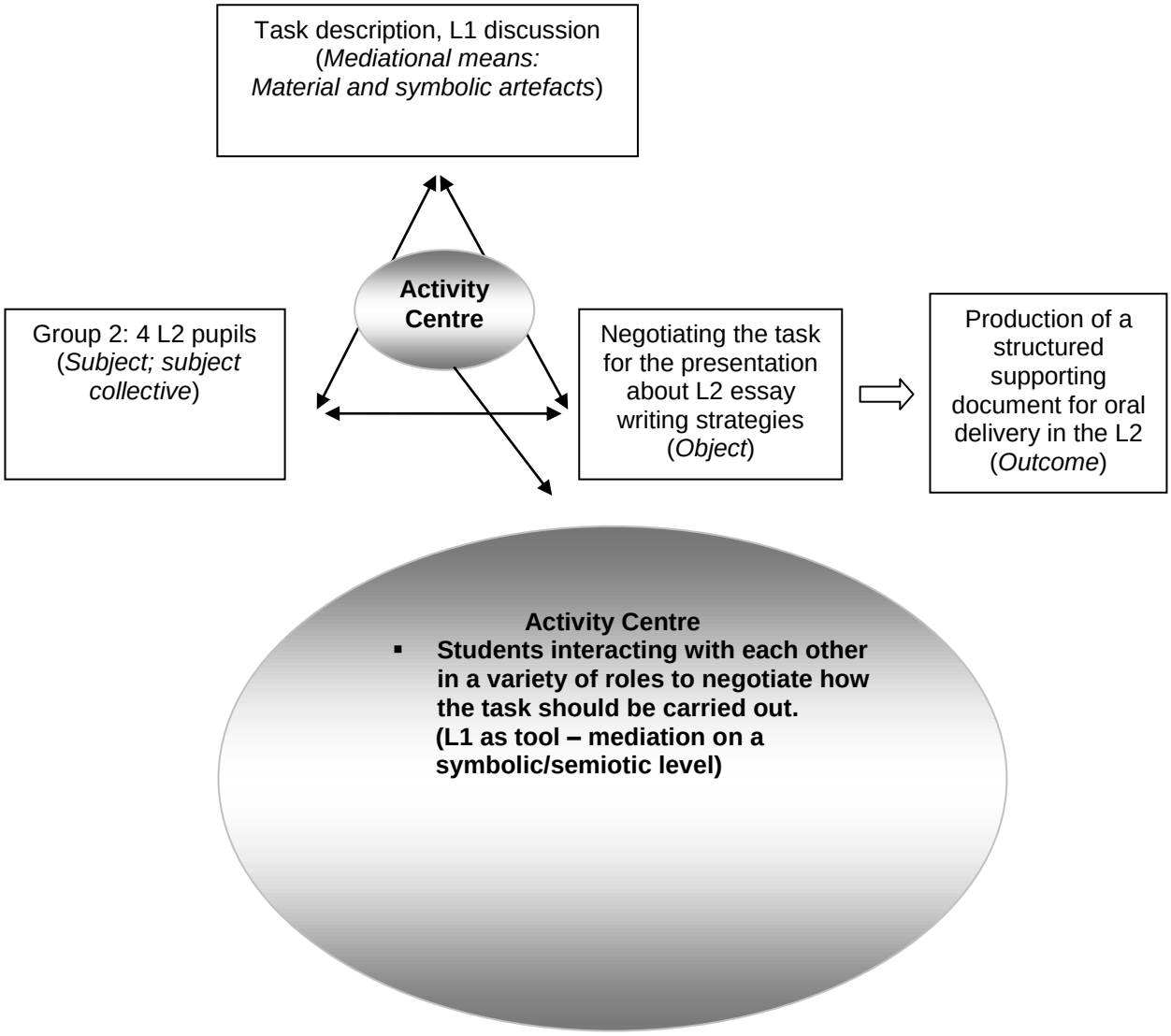
In line 13, she therefore offers a proposal by addressing the group as a unit "Maybe ***we*** should…" and finally requests confirmation from the group as a whole

in line 19. In this way, she progresses from collecting suggestions, to offering a proposal, to seeking a joint confirmation. In this sense, she also assumes the lead role in helping the group to arrive at a decision.

In contrast to Student D, student K distances herself from the group by referring to the other members as "***all yuh***" (colloquial form of "you all") while "accusing" them of abusing the internet "***suck milk from***" (line 5) and instructing them on how they need to proceed "***all yuh have to***" (line 7). As an independent contributor, she therefore makes a judgment on the views of the others and counteracts it with her view.

In a similar vein, the other pupils also act as independent contributors who make and defend their proposals. Figure 8.4 illustrates this interaction as represented at the AC.

Figure 8.4 The AC of off-computer work in Case Study Two based on Engeström's model amplifying the interaction at the AC



What is particularly noteworthy, however, is that these roles observed in the off-computer interaction seem to deviate somewhat from those observed in the interaction around the computer. The roles which pupils are seen to assume as they work around the computer are configured by the computer in terms of it providing a focus point which harnesses the interaction in such a way that the roles are less clearly distinguishable.

As will be discussed in the following section, the computer contributes, in this way, to defining a triadic social interplay in which the social role of the computer is inextricably intertwined with the roles enacted by the pupils.

8.2.1.5 Triadic roles

With regard to the roles observed within the interaction around the computer, an analysis of the observation data revealed that pupils acted in more equitable roles during the interaction while co-constructing their document than those which they assumed in the off-computer preparatory task. An excerpt from the observation notes based on the video protocol provides evidence of this:

> *As the students set to work on the document, Student T, who is sitting directly facing the screen is the one who begins performing the actions on the computer using mainly the mouse. She is given direction by the other members of the group who stare intently at the screen and point at the screen on a number of occasions to give her direction. At intervals, they also make suggestions, though there is little verbal communication and far more direct input to the document with either the mouse or the keyboard.*

[Excerpt from Case Study Two – Video Protocol]

In this sequence, turn-taking at the computer is almost an unconscious act, with each member deciding on when it might be appropriate to "take control". This can be seen as there is no interruption in the "switching" between one member using the mouse and another continuing or changing an action with the mouse or the keyboard in quick succession.

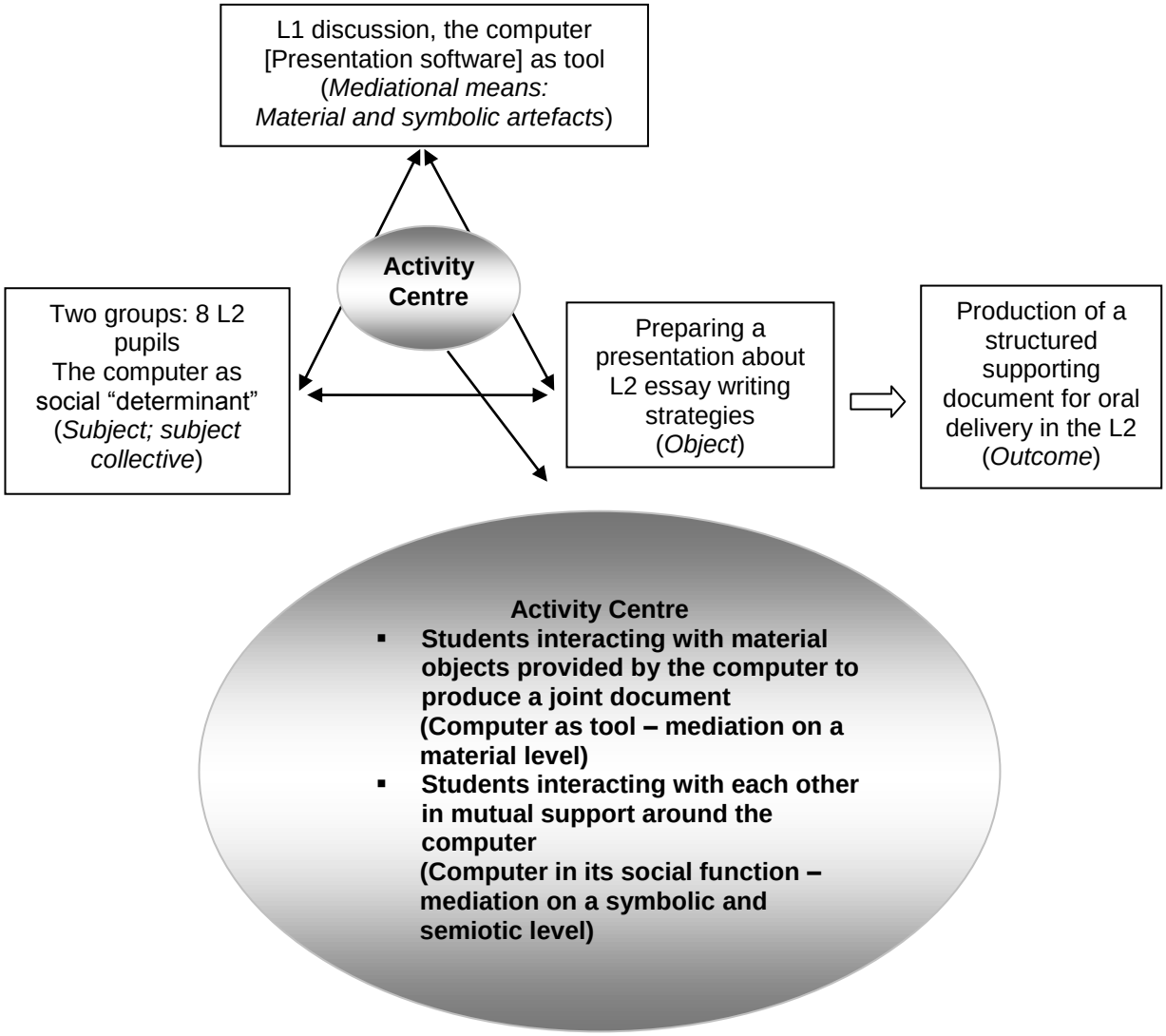
In this way, the computer unifies the actions performed by the students. In other words, unlike the tool metaphor which implies that the computer is simply used as a device to carry out an action, in this context, the computer also takes on a semiotic mediating function and, consequently becomes a determinant and embedded part of the social interaction, that is, of students "jointly" producing a document.

Van Lier (2002) defines this collaboration as facilitated by "indicational processes occurring in *triadic interaction*" (Van Lier, 2002: 146 – italics in original) which he more specifically defines as students working "with a joint focus of activity, [with] the object (the computer screen) as a third interlocutor of sorts. In other words, they are engaged in triadic interaction" (Van Lier, 2002: 148).

Within this triadic interaction, therefore, the roles pupils assume appear less clearly delineated and show a greater tendency towards collaboration. Using Van Lier's (2002) understanding of this interaction as a starting point, it can also be said that the interaction is facilitated by the social mediational function offered by

the computer. As can be seen in Figure 8.5, this corresponds with and, at the same time, expands on the representation of the mediational role of the computer within the AS defined in Case Study One. In this context, the status of the computer as subject is included to represent the degree of agency which can be ascribed to it on the basis of the role which it plays within the triadic interaction.

Figure 8.5 The AS of pupils working around the computer in Case Study Two based on Engeström's model amplifying the interaction at the AC



The nature of this triadic interaction is further corroborated by the pupils in reflective learner diary entries in which they documented how they perceived the learning experience. Not only did they identify ways in which the computer served as a useful tool, but they also demonstrated an acknowledgement of this more unified type of interaction from which the socially embedded role of the computer

could also be identified. Here, an obvious intertwining of the role of the computer and the roles assumed by the pupils is evident. (See Table 20).

Table 20

Classification of pupil responses on how they perceived the learning experience in Case Study Two	
Media used: Potential	**Learner perceptions**
Computer: Tool	**Meaningful use of media** *"Helpful"* "It made the presentation **easy to follow**." "It took **less time to present the same information** that would have taken longer…" "…seeing our ideas in front of us allowed us to move on quickly." "It **helped my planning/project management skills**… **helps to save time** when doing a presentation." "We were able to use the media to **assist us in the laying out of the presentation**…also helped u to present our ideas in a more concised…to compile our ideas in a meaningful way." "The **visual part** of the project, ie. **working and using the computer was very effective**." *"Developing media competence"* "I learned how to use powerpoint and how to make a presentation using a projector." "I am **now able to change the background and layout and add notes, sounds, animation** and so on." "…more about powerpoint…to do presentations using the computer." "I learnt **how to use Power Point** and that made me want to learn more about it." "I learnt…things about the computer – how to use graphics."
Supporting interest	*"Interesting"* "I was able to **visualize the concept without losing interest**." "**Interesting**. Because I have never seen a French lesson done like this before." "The media was used to do something **related to school work and it made it very interesting**." "**Interesting**, it was a new way of **conducting a class using media**…" "It made it **more exciting**."

	"**Interesting – It was different**, less blasé or **less boring** than the usual class."
Developing language skills;	**<u>Speaking/Presentation skills</u>:** "It was used as **somewhat of a cue card that stored a lot of information**." "**…**using Microsoft Powerpoint to do a presentation can be **useful in conveying a message true visual interaction**." "…the sessions helped **to clarify any grammatical point** I was uncertain." "I learnt how **to present in a meaningful way…to integrate graphics** into my presentation…I acquired information about **how to present orally and use power point at the same time**." "The **advantages of using Power Point**, **the art of structuring a Power Point presentation**…"
Defining social roles	**<u>Supporting collaborative learning</u>** "…it **gave us a common focus** and **encouraged us to cooperate**." "…a **collaborative effort** because **everyone worked together**……**everyone's skills came into play**…everyone got **to put their ideas in one place at one time** instead of putting down your own ideas in separate places then putting them together." ."…because **we worked as a group, we were able to handle certain obstacles** that arose along the way." "I **learned vocabulary from various members of the group**." "**Cooperative** and lively – they **made significant contributions to the success of the project**." **<u>Change of roles</u>:** "…**students presenting instead of the teacher**."

8.3 Triadic interaction as defined from the perspective of AT

As established in the previous section, the findings related to the nature of the interaction of pupils during their preparatory off-computer work deviated to some extent from the nature of the interaction around the computer. While the students were seen to be playing distinctive, though complementary, roles off-computer, the observation provided evidence of a more harmonious show of interaction as they worked around the computer.

Examined against the three hierarchical levels of interaction (see Section 4.3), these interactional episodes can be explicated to demonstrate the way in which

the roles observed within the classroom can be said to be valuable to the learning experience.

Starting at the AC, it can firstly be noted that, in both their off-computer preparatory task as well as in their work around the computer, there is a clear overlap in the use of the L1 as a symbolic tool through which pupils managed and achieved the goal of the task. This social function of the L1 is reminiscent of DiCamilla and Antón's (2012) recognition of one of the ways in which L1 supports collaboration, i.e., "…to create a social space…by giving learners a way to establish goals and subgoals and limit the task in progress." (DiCamilla & Antón, 2012: 165).

At the level of activity, therefore, the pupils assume individual roles dependent on the contribution which they see themselves best being able to make in order to carry out the task. As seen above, they make use of the L1 to work through the organisation of the task in the first instance, and then later, as they work around the computer, L1 continues to be the means by which they maintain the communication as they conceive, create and evaluate their joint product. In this second phase of work, however, another semiotic tool, the computer, now serves as the pivotal point of their interaction. The computer in this capacity, functions on two levels and enables two specific processes to take place as they work on the object.

Firstly, they concentrate and direct their actions via the material components of the computer to the physical creation of the product and do so by using and interchanging the mouse and keyboard in an intuitive rhythm.

Secondly, in a recognisable interpersonal reflective process, they formulate and revise the ideas which they wish to transmit via their product and do so by using other semiotic means, primarily brief verbal exchanges and gestures which they employ to draw each other's attention to specific details of their jointly produced thoughts displayed on screen.

In this latter way, within the activity, the computer takes on the role of this "third interlocutor of sorts" (Van Lier, 2002, 148) which "encouraged [us] to cooperate" and provided the necessary collaborative space where "everyone got to put their ideas in one place at one time."

The activity in which the pupils engage, defined here as triadic interaction, is therefore represented by their collaborative co-construction of the presentation as a dynamic, yet tightly knit social community.

It is important to note at this point, however, that "tightly knit", while used to define the general work ethic of the group, does not obliterate possible conflicts which may have arisen within the group.

As evidenced by comments coming from the pupils in response to how they experienced working with each other, it was clear that there were challenges within the groups:

"I did not have much of a choice in the decision-making" **Pupil 1, Group 2**

"I am familiar with them though some times were more challenging than others" **Pupil 2, Group 2**

"Sometimes it was hard to work with people because everyone has an idea of the way she wants it to be. But one must…" **Pupil 1, Group 1**

"Sometimes the varying personalities of group members made it difficult." **Pupil 2, Group 1**

However, it is also significant to note that these very pupils also confirmed the "tight knit" referred to above in terms of the group working collaboratively:

"…while we were researching to do the project, we were learning more" **Pupil 1, Group 2**

"…it [the media] gave us a common focus and encouraged us to cooperate" **Pupil 2, Group 2**

"The ups and downs working on the project were all part of the experience...It was a useful experience" **Pupil 1, Group 1**

"However, because we worked as a group we were able to handle certain obstacles that arose along the way" **Pupil 2, Group 1**

[Excerpts from Case Study Two – Learning diary] (see Appendix 21 for samples of Learning diaries and Appendix 22 – Corroborative analysis of critical friend (3) – Case Study Two).

In moving on to look at the interaction from the second level of the hierarchy, the action level, it should be noted that in this constellation, there is a fine dividing line between the broader “activity level” and the more precise “action level”. From this latter perspective, the focus is on the cumulative elements which constitute the action.

At this level, the stages comprising the action directed at the creation of the product, that is, the design, text formulation, structuring and animation, are all carried out by the pupils acting in complementary roles and supported by the computer as a tool and acting its social function, to achieve the goal of producing a structured document to support the pupils’ oral presentation.

Whereas in their off-computer work they act in more disparate roles to focus on actually structuring the task, around the computer, they literally act on their goal as a group to create a balanced document content-wise and in terms of its visual impact.

Finally, it is at the third level of the hierarchy, the operational level, where the focus is on the mediational means, that the conditions provided, and at the same time created, to enable pupils to achieve the goal can best be explicated.

As previously depicted in Table 20, the pupils make explicit the way in which the computer supported them in their collaborative work. At this level, again it can be observed that the computer is identified as the principal mediational means contributing to the improving conditions for learning in both material and symbolic terms (see Appendix 23 for sample extracts of triangulated data exemplifying the analysis from an AT perspective).

Referring back to Hubbard’s (2009) classification – again specifically in terms of efficiency, effectiveness, access and convenience – and based on the CALL texts of the learner perspectives outlined in Table 20, the following operations, with emphasis on the roles observed within the interaction can be defined:

- Learning efficiency: Learners work more quickly and harness their ideas in a structured manner, in **mutual** support, relying on each others’ skills and contributions;
- Learning effectiveness: Learners collaborate in a shared learning space in which they **all actively** seek to merge their ideas into one and learn from each other in the process;

- Access: Learners **interact at, with and through** the medium in such a way that this process of interaction is facilitated by the computer's material as well as symbolic features and functions respectively;
- Convenience: Learners all simultaneously made use of the full range of potential offered by the various levels on which the interaction in this constellation occurs.

8.4 Summary of research findings: Roles and social interaction in the one-CALL context

Chapelle (2000) addresses the issue of roles of participants in CALL as follows:
"Rather than defining participants' roles in terms of the role of the computer, role is defined in terms of how responsibility for controlling various facets of the activity is distributed among participants" (Chapelle, 2000: 209). One clear implication here, as the structure of the AS suggests, is that while the computer brings in a new dynamic to the classroom setting, interaction does not just revolve around the computer as a central feature. This revalidates Chapelle's (2000) reference to the computer itself as a participant and further suggests that the AS representation of interaction allows for equal consideration of what I have referred to earlier as all "its constituent parts".
In Case Study Two, there is evidence to suggest that the computer plays a complementary rather than central role as students interact in this setting.
Firstly, it can be said that the roles and the group dynamics are allowed to shift in the integrated CALL classroom.
The subject (as an individual), the subject collective (individuals as group; group and computer) and the object (as product and process) are all intertwined in a complex triadic relationship in which learning can be seen as a multifaceted process:
"…for most sessions something new was learnt in French or on the computer."
Pupil 3, Group 2

[Excerpt from Case Study Two – Learning diary]

Additionally, learning conditions are being enhanced on a variety of levels (efficiency, effectiveness, access, convenience, motivation and institutional efficiency).

Of major significance, is the way in which pupils in this constellation actively construct their own learning experience.

Firstly, in deciding on a work-plan, they instinctively divide their presentation preparation into two phases: a discussion phase and computer-work phase. In this way, they create a multiple-context arrangement within the classroom which has implications for the ways in which they interact and the roles which they (including the computer as a participant incognito) assume.

Secondly, as evident during the computer-work phase, students reciprocally support each other, and in so doing define a unique social space in which the activity in which they are engaged is directed by the shared (community) motive and their actions are unified towards the goal of creating a joint product.

The computer, here, provides both a framework for the interaction and mediates the actions on both a material and a symbolic level.

8.5 Conclusion

Having looked at the roles played by pupils in an integrated CALL setting, it can be concluded that interaction of a collaborative nature can be optimally facilitated where work around the computer is directed at the creation of a joint product.

The fact that pupils are required to co-create a product which is representative of the group's joint conceptualisation might seem an automatic pre-condition for collaborative work. However, as has been demonstrated in this case study, one of the key factors identified by the pupils themselves as lending itself to collaboration was the "centralised focus" within the social set-up of this constellation which obliged them to work collectively to the extent that the roles assumed by pupils as they worked around the computer were no longer singularly distinguishable.

This suggests that in terms of efficiency and effectiveness in particular, the computer itself assumes a new role. This role has expanded on the very static view of the computer as tool and moved it into the realm of active participant, making a somewhat active contribution to the social interaction taking place among the pupils.

While initially pupils were able to identify with standard roles such as coordinator and independent contributor, closer examination of the social interaction revealed less clearly decipherable roles.

This observation serves as the basis on which conditions for improving learning (see Section 8.3) can be defined, particularly as it relates to the potential for “equitable” participation in the process of co-construction of a language product. This equitability, as previously discussed, refers more specifically to the flexibility which this learning arrangement around the computer affords and in which a complex triadic interaction is evident.

In order to examine this triadic interaction even more closely, this time with greater emphasis on the ways in which pupils were able to acknowledge the specific roles they played and its impact on the interaction, a final case study was developed.

In the following chapter, this replica study will attempt to further elucidate the triadic interaction occurring in the integrated CALL context primarily from the emic perspective.

9 Triadic interaction from two perspectives

A presentation and discussion of the research findings of Case Study Three as they relate to issues inherent in Research Question Four and as seen from the AT perspective

9.1 Introduction

In the previous case study, triadic interaction was established as considering the social function of the computer in terms of its participant value in defining the roles assumed by the pupils.

Van Lier's (2002) concept of this "third interlocutor of sorts" (Van Lier, 2002: 148) is also taken up in research on oral interaction and the specific functions of the computer as a trigger affecting social relationships (Gumock et al., 2005). In looking more closely at the role of the teacher in triadic scaffolds, Meskill (2005b) examines yet another angle of triadic interaction in which features of the computer can support teachers in instructional dialogue.

While these two latter perspectives focus on oral interaction and language learning opportunities, the third and final case study in this research project places emphasis on obtaining retrospective perspectives on the specific nature of the triadic interaction taking place in the integrated CALL classroom AS from a more holistic perspective.

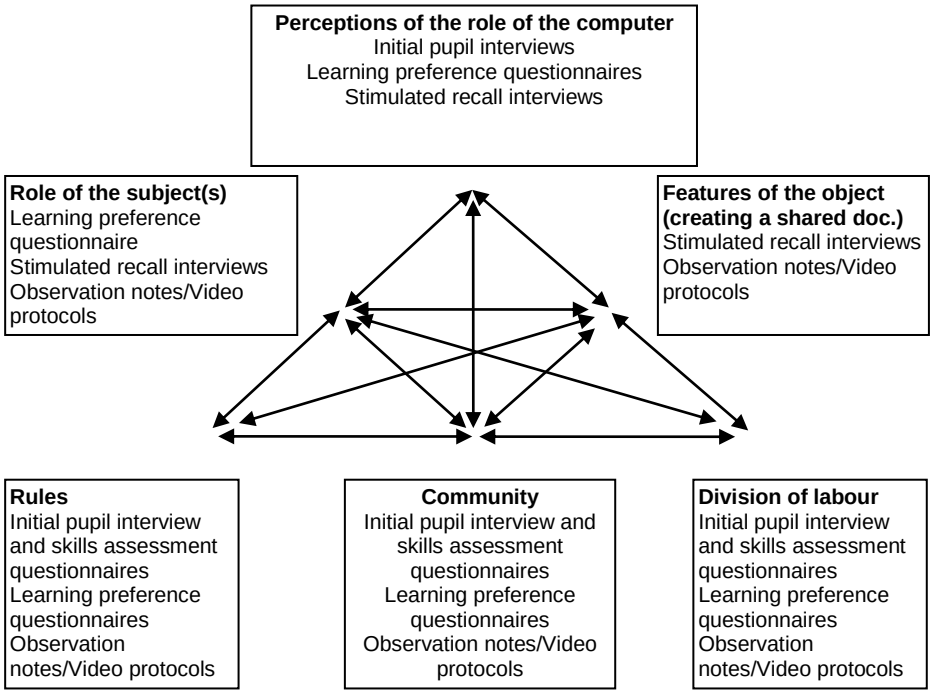
Whereas in the previous case study the pupils' roles during preparatory work as well as their interaction around the computer were highlighted, in this case study, the perspectives of the pupils themselves are brought more into focus to respond specifically to the question of how pupils view the entire experience in retrospect and what are the implications of these understandings for further improving conditions for learning in the integrated CALL classroom.

Once a background to the study and the pupils' profile and views on the use of the computer in the classroom have been presented, the chapter will focus on the analysis of the retrospective data provided by pupils on their experience.

This final case study therefore serves a dual function as a replica study in terms of more closely relating the issues of learning as a shared experience and student roles within that experience and the impact of the triadic interaction with the computer mediating in both its tool and social capacity. The fact that this examination is approached from a predominantly emic perspective also gives a more personalised and complementary appreciation of how these conditions

contribute to improving the learning experience in the integrated CALL classroom (see Figure 9.1)

Figure 9.1 Overview of data triangulation process leading to the identification of roles within a one-CALL classroom AS – Case Study Three



The conclusion to this case study will, as a consequence, summarise the features of the AS which have been identified throughout the projects to have contributed in specific ways to improving the learning experience and, therefore, set the framework for the closing discussion.

9.2 Background: A project summary

Having completed the Pilot Study along with the first two case studies as an observer, when the opportunity presented itself for me to be engaged in a final case study as a participant-observer, I saw it as a chance to view the process of triadic interaction from a new standpoint.

At the time of the study – as a full-time language teacher at a post-secondary vocational college (Berufskolleg) located in the Federal State of Baden Wuerttemberg in Germany – I was actively engaged in the design and delivery of the foreign language programme.

Within approximately four years (2004-2008) just prior to the time when the case study was carried out, the institution had further developed its programme of

certifying bilingual and trilingual commercial secretaries and assistants into a more integrated international business programme. Despite this shift, the focus on teaching and learning foreign languages (primarily English, French and Spanish) was still at the heart of the curriculum and carried with it a high degree of importance for the administration as well as for the teaching body, particularly in view of the institution's aim of updating its programme to meet the standards of an institution of higher education, a status it would achieve within the German educational landscape in 2012.

In April 2008, I therefore organised another project with my group of nine post A-level Spanish students, as part of this initiative of improving the language programme.

As a complement to my research objective which, as previously stated, was to conduct a replica study to examine learner perspectives on triadic interaction, my pedagogical objective for the final part of the academic year was to provide an opportunity for these advanced students to consolidate what they had learnt in the business letter writing segment of the Spanish module by presenting key aspects of business letter-writing for their basic-level Spanish peers in a parallel course by means of an oral presentation. This oral presentation was also to be supported by the visual effects of an accompanying PowerPoint presentation.

This pedagogical objective would have benefits for both groups. In the case of the advanced students, not only would they be required to reflect on what they had learnt so far in another part of the module, but they would also have the opportunity to apply transferable skills of presentation design which they were developing as part of their completion of the compulsory European Computer Driving Licence offered as part of the college's programme.

In the case of the basic-level Spanish students, there would be the chance to obtain a better grasp of the grammar, language and style used in writing business letters in Spanish which they would have already had a basic introduction to and which they would be required to master at a basic level in their exams at the end of the academic year.

Once the project had been presented to the students and I had received confirmation of their willingness to participate actively, I scheduled a three-week preparation and presentation 'unit' prior to our exam revision week (see Table 21).

The way in which they would organise the task preparation and the times at which they would meet was left to the discretion of the group. However, for the purposes of the research, each group was asked to meet at least once in the classroom, so that their interaction could be observed. This was thought to be important as the group had worked quite autonomously and flexibly during the year and in this way, the project would not take away fundamentally from the work ethic already established within the class community.

Table 21

Overview of project phases, associated tasks and areas of research focus – Case Study Three			
Phase	Task/Pedagogical objective	Research objective	Interactional focus
Pre-project (Week 1) Questionnaire and interview	To determine pupils' views on language learning and the use of the computer	To establish a profile of the participants and an understanding of the community composition	Written views and oral exchange on initial perceptions
Presentation preparation (Weeks 1-2) Task execution	To give pupils the opportunity to reflect on, formulate and format their presentations	To observe and investigate pupil interaction and learning experience as they prepare their presentations	Oral exchange
Presentation (Weeks 2-3) Discussion/ Organisation	To give pupils the chance to present their final product	To observe the way in which the presentation represented the reflections during the preparation phase	Oral presentation supported by PowerPoint
Evaluation (Week 3) Project evaluation	To allow students to reflect on the project and give explicit evidence about the extent to which it can	To conduct stimulated recall interviews with the students in order to determine how the concept of learning as	Oral exchange on retrospective perceptions on triadic interaction

	be said to have enhanced their learning experience	a shared experience links to student roles and is impacted on by the social function of the computer in triadic interaction	

In terms of the computer facilities at the institution, it should be noted that although the learning resource centre made approximately 20 computers available to students to use at their leisure for tasks or research related to their studies, each student at the institution was required to own a laptop.

Despite this regulation, there was no specific training nor established teaching and learning strategy within the institution which offered support for drawing on the possible benefits of the laptop classroom. This meant that students brought their laptops along on days when the compulsory IT course appeared on their schedule and at any other time when they deemed it necessary.

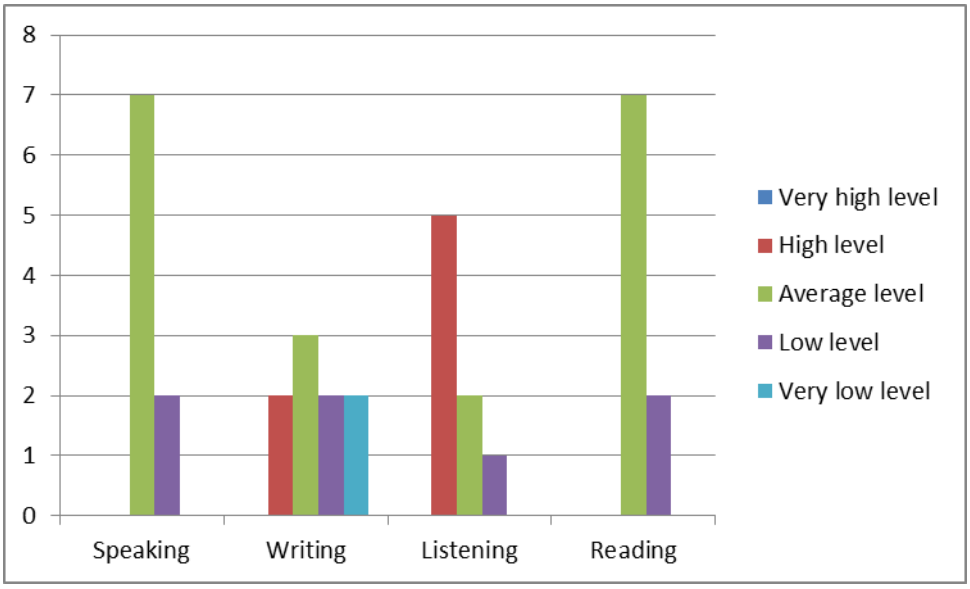
Within the framework of this research, and as illustrated in Chapter One, this constellation can be defined as a LTE in the sense that while, theoretically, computers were available and were at the disposal of both students and teachers, in the general curriculum these resources were only utilised by teachers in an ad hoc manner, if at all, and cannot, therefore, be seen to be serving in a substantial way to support learning.

9.2.1 Profile overview of participants

The students, all relatively recent A-level graduates in their late teens to early twenties, were taking the Spanish course as a second additional foreign language and had all had at least two years of Spanish at school or as an extra-curricular language course. The course focused on the development of oral skills and also involved students in the use of new media. During the year, students had been required, for example, to take part in blended-learning sessions which combined online discussion via the institution's Moodle platform with face-to-face conversational practice.

In terms of their language skills, when asked to assess their skills, the students all indicated having between average and low speaking and reading skills, but a broader range of levels of proficiency in the other skills (see Figure 9.2).

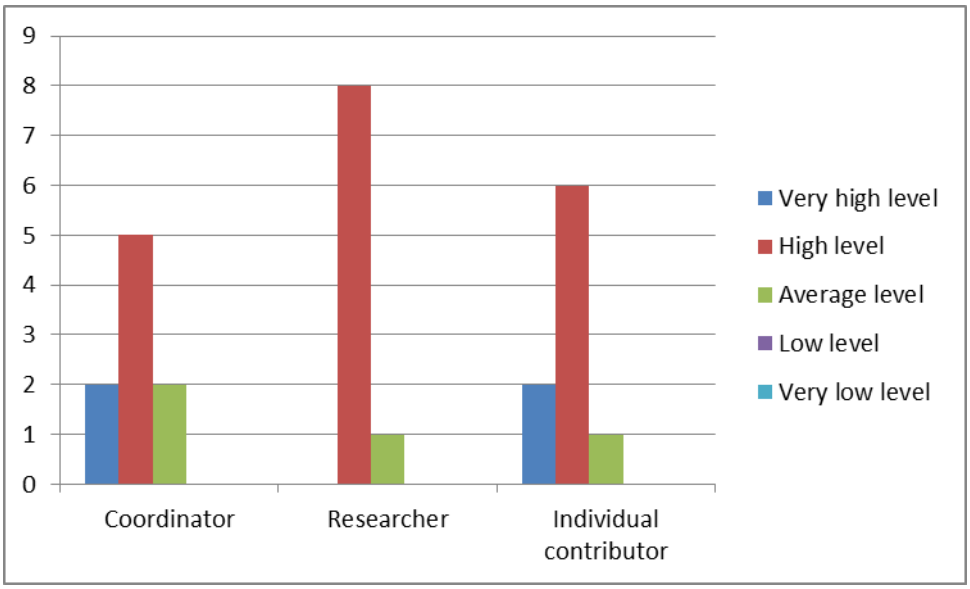
Figure 9.2 Pupils' self-assessment of their language skills – Case Study Three



This spread shows a relatively homogeneous proficiency level within the group, with the strongest skill on the average being listening.

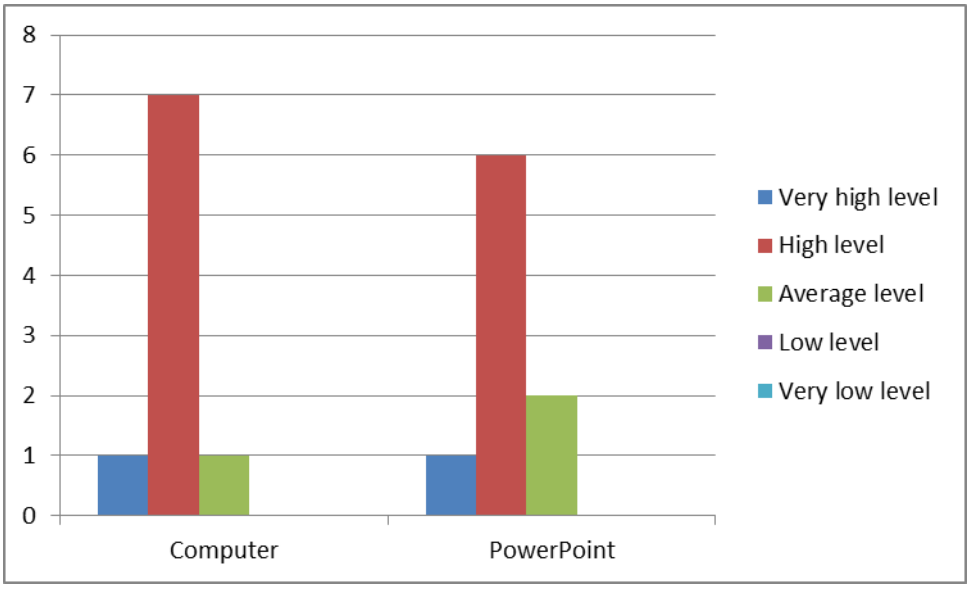
Students also predominantly indicated being able to function at a high level in all aspects of group work relevant to the project (see Figure 9.3).

Figure 9.3 Pupils' self-assessment of their social skills in the classroom – Case Study Three



In a similar vein, students also indicated having a generally high level of competence in the use of the computer in general and PowerPoint in particular (see Figure 9.4).

Figure 9.4 Pupils' self-assessment of their skills in the use of media in the classroom – Case Study Three



This overview of students' skills assessment has implications for the project on two levels. Firstly, and as mentioned above, this high level of homogeneity in the three skill areas presupposes a certain balance which would in itself facilitate the completion of the task.

And secondly, particularly in view of the idea of dividing the group into further groups of three students each and since students generally did not express any preference for a particular social learning form, there would be an adequate distribution and complementing of competences in each skill area which would not place any one particular group at a disadvantage.

Finally, when asked to share their ideas about learning Spanish, what became evident in the responses was the value students placed on interaction in the classroom. In specific response to when they enjoyed learning Spanish, students expressed the following:

"...when I can interact"

"…when I'm able to participate"

"…when everybody in class participates"

Additionally, when giving their views on how Spanish can best be learnt, students placed emphasis on the need to speak. Here, they suggested that oral production was important through:

"…speak[ing] a lot"

"…speak[ing] it a lot, because it's a lot easier that way to develop a kind of sense/feeling for the language"

"…a great variety of speaking"

"…conversations in class"

or as specifically expressed by one student:

"…this you can do very well if you work in pairs…so that everybody has to say something".

[Excerpts from Case Study Three - Learning Preference questionnaire] (see Appendix 24 for sample Learning Preference questionnaires – Case Study Three and Appendix 25 – Corroborative analysis of critical friend).

This suggests that speaking in pairs or within a group where everyone has a chance to participate actively, from the perspective of the students, generally constitutes a prime condition for language learning. This means, students see and value their role as active participants in the learning context.

9.3 Triadic interaction: Learning as a shared experience and role perceptions

Within their interaction around the computer, it could be observed that the students approached the preparation of their presentation in much the same way as was evident in Case Study One. In this setting, the interaction taking place at the AC was represented as constituting an inextricably linked process of social interplay. Not only was it evident that the students were involved in a genuinely collaborative effort with the computer as a mediational means in its role as a tool, but the computer was also seen as providing support to the social structure of the interaction in its social function (see also Table 18).

The latter role of the computer, as presented in Case Study Two, in terms of supporting the collaboration and as ultimately contributing to shaping the roles of the pupils, is also reaffirmed in the present case study. In the following sub-sections, these afore-mentioned aspects of the triadic interaction will be presented as evidenced in the case study.

9.3.1 The shared experience and social roles in triadic interaction

In terms of facilitating a shared experience, in this case study it was observed, based on the definition of the descriptor identifying the computer as facilitating a shared experience, that students continually acted in a "shared space" in which they continuously supported each other and acted together in a unified flow of verbal exchanges and gestures:

> *Once the students have found a comfortable seating arrangement around the computer, they immediately begin to consult their resource document and, with one student acting as the typist, enter their ideas into the presentation. There is continuous exchange between them, but directed toward the presentation. They all focus on the screen, briefly look at and talk to each other, but generally their suggestions seem to be directed at the screen which they constantly use as a reference point as their gestures and eye contact make evident. There is no indication of any one student dominating the task as the exchange among all three students is constant in terms of both verbal and paralinguistic moves.*
>
> *As the group work starts, there is a brief discussion about how the task should be approached. It is clear that two of the three students are more vocal than the third, who is, however, drawn into the discussion by one student who keeps eye contact with her and indicates what she is referring to in the resource material. At the beginning, the students rely heavily on the resource material and there appears to be more consideration of the content with the computer drawing their attention intermittently, back to their product. When the focus is directed toward the computer, there is still an almost clear division between off and on computer work.*

[Excerpts from Case Study Three – Video Protocol] (see Appendix 26 – Corroborative analysis of critical friend).

These two extracts not only demonstrate a clearly balanced degree of contributions among the members of the group, but it also makes evident, as established in Case Study Two that the roles of the participants are complementary though not that clearly decipherable as they work together around

the computer. This again emphasises the opportunity which the computer affords for improving learning on the level of effectiveness according to Hubbard (2009). In other words, the scenario detailed above supports the definition of learning effectiveness defined earlier on in Section 8.3.

Additionally, another aspect of the role of the computer within this shared experience and which was also seen in the Pilot Study, was its specific functionalities in serving the learning experience. As revealed during the stimulated recall interviews, when asked specifically about how they understood the role of the computer, students expressed an awareness of the multiple functionalities of the computer in terms of facilitating knowledge sharing,both in its capacity as tool ("We focused most…on **how it looks to the others**") and in its social function ("The computer made it **possible to realise our ideas**").

[Excerpts from Case Study Three – Stimulated recall interviews].

A closer look at the roles of the participants in this case study also reconfirms findings arrived at in Case Study Two.

As indicated above, the roles assumed by students were relatively homogeneous in nature as no dominant member could be distinguished.

However, when asked in the stimulated recall interviews about which roles they perceived themselves and their classmates to be assuming, there was a clear perception of each person contributing in a distinct way.

Each of the students interviewed saw themselves making a contribution to some greater or lesser degree based on the extent to which they saw opportunities to do so. Whether they assigned themselves as "leader" or "typist", however, they did not give any indication to suggest that their role was either a dominant or less dominant one, as they also mentioned the valued contribution of the other members of the group.

What also came across strongly in their responses to how they felt interacting with each other, is the fact that they described their interaction with each other and with the computer as "normal; not anything special or strange". For the students, the way in which they were activated and enabled to create a joint product was almost a taken for granted fact. It seemed like a natural thing that even in distinct roles, they were able to work collaboratively:

> "*I find it good when one person types. Despite that the group is working together*."

[Excerpt from Case Study Three – Stimulated recall interviews] .
This implies, from the perspective of the students, that the computer served the collaborative process by enabling them to work closely together.

When examined from the perspective of AT, the perceptions of the students in this case study regarding how they experienced learning in this integrated CALL classroom serve to eluminate the nature of the different features of the AS.

Here the link between learning as a shared experience, learner roles and, consequently, the impact of the computer in the triadic interaction as previously defined in terms of improving conditions for learning, can be clearly seen (see Table 22).

Table 22

Classification of pupil responses on how they perceived the learning experience in Case Study Three	
Learning space/Role	**Learner perceptions**
Individual contribution – Complementary independent roles *Subject*	"**I made suggestions** to the things and how it should look like and **I did some research** in the book." "I was the **leader at the beginning**, because nobody wanted to say anything" "I **made suggestions** too"
Interaction with peers – Collaboration/A collaborative effort *Subject-subject*	"H. was the one who **did the coordinating part**…C. **had good ideas about how to write**…on the page." "E. was kind of more the leader..J., sometimes she would help in decision making…She didn't say much, but she had the freedom to say something if she wanted to, so I think it was pretty balanced" "We just look how it works in the presentation and then **we decide which one is the best** finally" "It's just **normal**. It's not that special or strange. We're just sitting there **watching the laptop and talking. Sometimes we look at each other sometimes not**" "I find it good when one person types. Despite that **the group is working together.** It's just that one person is enters things on the computer" "The computer **helps us to make a unified presentation**…in this way one group can begin and the next group can continue from that" "**Everybody made suggestions**…there was **discussion** and **we always came to an agreemen**t"
Computer: Tool – Document production *Mediational means (material)*	"Adding the way **we can structure our ideas more clearly** than…when we are just talking to each other" "We focused most…on **how it looks to the others**" "It helps us with our ideas…for the others to see our results and ideas" "Everything which we did, our results, **could only be seen on the computer**. Without it we couldn't do a PowerPoint presentation" "It's just more professional" "…we payed **more attention to the computer and the stuff you can do** on the computer"
Computer: Social function – Mediating and in mutual support relationship *Mediational means (symbolic)*	"Everybody says "**look at the computer**"…and then we place like this and this...**to insert our ideas** in the presentation" "Everybody makes an idea and then **we just try it on the screen** and then the result is the one which looks the best. **This is part of the communication**" "The computer made it **possible to realise our ideas**"

9.3.2 Revisiting the question of the computer in its social function in triadic interaction

Despite the fact that students expressed an appreciation for the way in which the computer contributed to their collaborative experience, their perceptions, as further revealed in the stimulated recall interviews, also propose a second perspective from which the interaction needs to be viewed.

In identifying what can be seen as the disadvantage of their interaction around the computer, students felt that the computer was taking away from their communication:

> *"It's **taking away interaction between us**…we are not talking so much I think when we are in front of the computer, because **everyone is concentrating on the things that are on the screen**"*
>
> *"We are **talking to the computer**…We didn't look at each other"*
>
> *"It **takes a bit of the attention away…everybody's just looking at the computer screen."***

[Excerpts from Case Study Three – Stimulated recall interviews].

It is evident that students do not consider the computer to be supporting them in communicative language learning. This is certainly a valid criticism. However, such an argument can be immediately dispelled, if one considers that the concept of integrating the computer as a normal artefact within the language classroom is intended to serve language learning on different levels.

As has been the case in this research, emphasis was placed less on the communicative support which the computer can afford students through the use of other task designs and software. Here, the emphasis was on the nature of the interaction in the creation of a joint product. The question being addressed, therefore, was the value to be had on the level of interaction with the computer in a 'social' constellation. As the results so far have shown, students stand to benefit from a number of features at work in the AS in this constellation. What the research does not suggest is that this is the only mediational function of the computer possible in an integrated CALL classroom.

In the view of the students, the interaction can also be seen as a form of communication even if the focus in the particular activity is not on linguistic gains. In a complex and diverse environment, perceptions of learning need to be

broadened so that the language classroom also offers opportunities for learning in a more holistic manner.

This understanding is also exemplified from the student perspective. When asked about the form of communication taking place within the group, one student suggested that the very way in which they interacted with the computer was also an aspect of communication:

> *"Everybody makes an idea and then **we just try it on the screen** and then the result is the one which looks the best. **This is part of the communication**"*

[Excerpt from Case Study Three – Stimulated recall interviews].

The implication, therefore, is that CALL interaction needs to be viewed in broader terms – a perspective which takes us back to the original focus of the discussion at the beginning of the research – that is, not only from the angle of cognition, but also from the perspective of the social features of interaction within the language classroom.

9.4 Research findings: CALL interaction defined in terms of triadic roles

As suggested above, CALL interaction needs a broader framework within which it can be examined as a holistic experience.

The research, based on the perceptions of the students, indicates that the subject and subject collective are supported by the computer in its social function, that is, as an aid in providing a form of expression for ideas. This means that even within the definition of the participants, and here again we are reminded of Van Lier's (2002) "interlocutor" metaphor, the computer approximates a member of the subject collective.

As a mediational means, therefore, the computer offers itself as a tool with specific functionalities which facilitate the outward projection of ideas. It not only facilitates the physical representation of ideas (on a material level), but it acts as the meeting point for ideas (on a symbolic level).

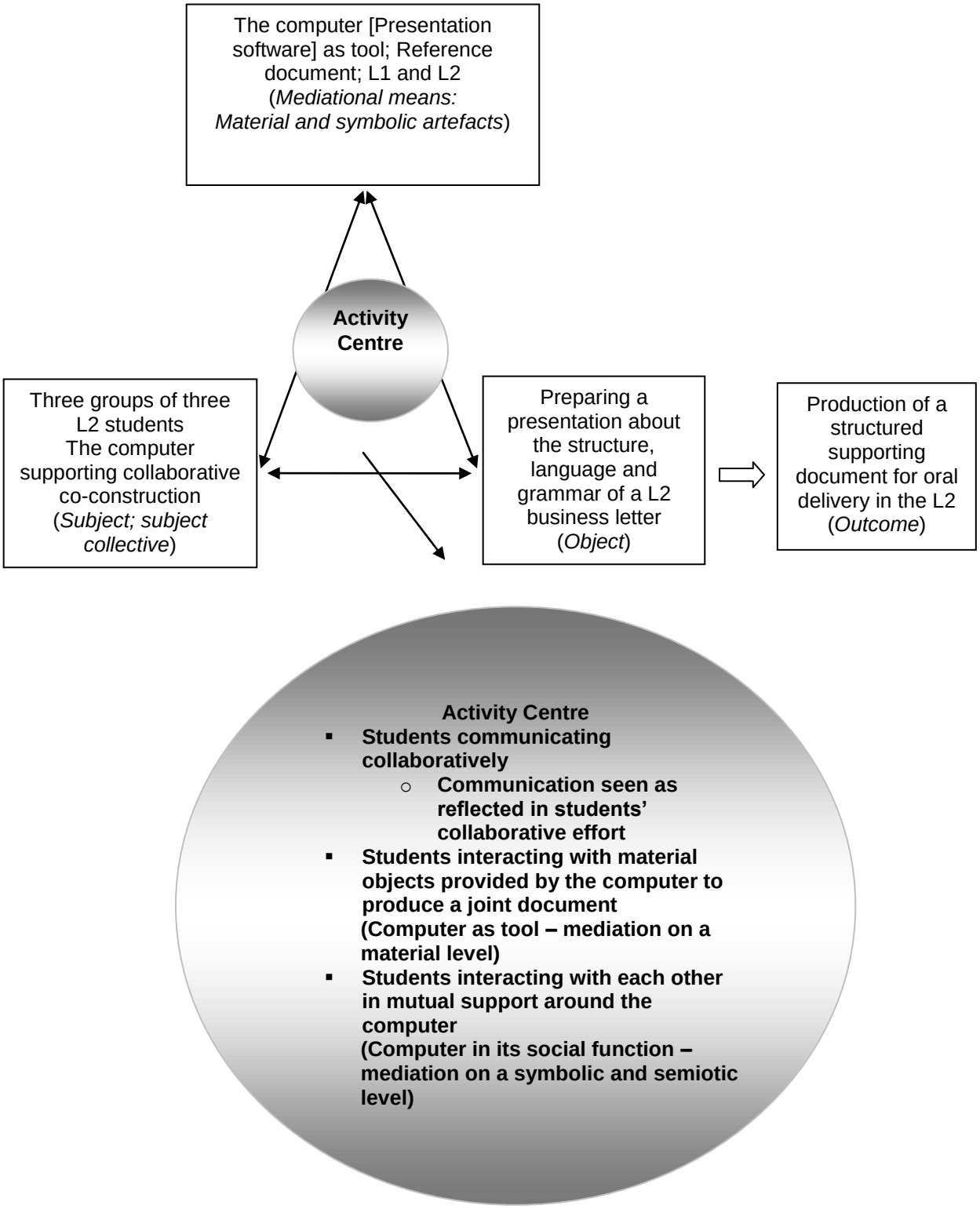
In terms of the object of the activity, the computer's physical potential (that is, availing the students of the software) is the base upon which they act to create their product. Based on Nardi's (1996) definition (see Section 4.2.2), it can be said that the object of activity is also represented by the symbolic feature of the

computer, that is its potential to allow for the manipulation and merging of ideas which at the same time becomes the actual product of their interaction.

In attempting to bring together these postulates of the computer's role within this triadic interaction, it can therefore be said that the potential of the computer in this constellation constitutes multiple or rather dynamic facets.

As illustrated in Figure 9.5, the AC sums up the nature of this interaction by configuring the computer as an embedded feature of the collaborative experience. Not only are the students directly involved in a collaborative communicative experience with the computer, but they are also supported by the computer on a physical and symbolic level (see Appendix 27 for sample extracts of triangulated data exemplifying the analysis from an AT perspective).

Figure 9.5 The AS of the triadic interaction in Case Study Three based on Engeström's model amplifying the interaction at the AC



9.5 Conclusion

This final replica case study has sought to consider triadic interaction from two perspectives. Firstly, it has examined the interaction and the specific role of the computer within the triadic interaction from the point of view of supporting the collaborative experience of the students with the computer as a mediational means on both a material and symbolic level.

And secondly, it has presented the conflicting perspective of the computer taking away from the communication between the students, yet, in so doing, defining another form of communicative experience in which the L1 plays a significant role.

In order to demonstrate the bearing which these understandings have on the interaction, these perspectives have been illustrated within the AS at the classroom level and amplified at the AC to summarise the impact on the learning experience.

This final exposition of the AC serves as an appropriate entry point for the general discussion of the research findings which will not only bring together the major findings of the research projects, but also, in response to the final research question, offer proposals for improving language classroom practice in general.

10 Conclusion

A synopsis of the research findings in response to the research questions – as illustrative of an AT perspective on interaction in an integrated CALL classroom – and related projections for further research

This final chapter brings together the research findings of the main case studies presented in relation to the general research goal established in the introduction and more specifically as they respond to their respective research questions (see Section 5.2.2).

As indicated in the introduction, this chapter therefore provides a synopsis of the research results. In this way, it links the discussions within the case study chapters to the principal concepts highlighted in the theoretical and conceptual framework presented in Chapters One to Four. These concepts include the role of the computer, the call for normalisation and the integrated CALL classroom, interaction and its contextual features and AT as a framework for crystalising the process into which these afore-mentioned concepts are integrated.

In attempting to exemplify in concrete terms the features of interaction which shape and define the effectiveness of the integrated CALL classroom practice, the discussion also incorporates a synthesis of CALL "texts" as understood and proposed by Chapelle (2000).

Finally, following a brief summary of the overall research project, the chapter ends with recommendations for further research.

10.1 The role of the computer in interaction

The role of the computer within the dynamics of what I argued in the introduction to the research as being representative of a flipped version of a LTE is one which offers potential for improving conditions for learning.

This concept of the flipped version of a LTE which removes the central focus of the CALL classroom from a media-centered to a learning-centered environment has direct implications for the learning arrangement, consisting primarily of the learner profiles (the skills available), the mediation (the role and function of the tools available), the social learning form and the nature of the tasks.

These aspects of the learning arrangement are the selected contextual factors with which this research has been concerned, and the aspects which constitute what I

have defined from an AT perspective as constituting the AC of the learning experience in the integrated CALL classroom.

What is of particular importance in understanding the role of the computer in this constellation, and as has been established throughout this research, is the specific way in which it is intertwined within the social interaction.

Seen from the perspective of the participant metaphor, rather than simply from the more commonly referred to tool metaphor, and consequently from a sociocultural perspective, the computer is an interlocutor which shapes and whose role is shaped by the nature of the interaction among the learner participants.

Case Study One's contribution to this discussion and understanding of the role of the computer can be seen in the way in which it responds to its respective research question – Research Question Two:

In what ways can the interaction in an integrated CALL classroom be defined and can these definitions be said to constitute effective conditions for learning in the foreign language classroom?

Firstly, in terms of the reciprocal interplay mentioned above and in achieving the first objective, it can be said that the computer facilitates a shared experience, serves as an efficient medium in this process and supports the further exchange and sharing of ideas (see discussion in Sections 7.4 and 7.5).

As had been already established in the Pilot Study, these three angles from which the pupils' perspectives on the learning experience can be interpreted is precisely the basis of this reciprocity. Pupils described their experience as "shared" by making it clear that they made decisions together rather than independently. In defining their collaborative work, they also described the way in which they unified their ideas: thinking, working "*interchangingly*", talking and deciding. All of these actions indicate how they interacted in direct relation to the joint product which they were creating on screen. In other words, all these actions were directed at the object of creating a presentation via the computer – as tool and through the computer as mediator of their actions. This means that they were using the computer to facilitate the creation of their document and in this process, the computer was facilitating the collaborative effort in which they were engaged as well as allowing for sharing within the larger context of the classroom.

In the Pilot Study, this latter process was explicated by means of an assessment of pupils' general understanding of the way in which the functionalities of the computer contributed to the learning experience within the integrated CALL classroom (see Section 6.7.3). Here a parallel was drawn between the computer as tool and in its social function. In relation to the results of Case Study One, this exemplifies the reciprocity as a parallel process, that is, while enabling pupils to interact via its functionalities, it shapes the way the pupils interact with the computer and with each other (compare Table 13, Section 6.7 and Table 18, Section 7.5).

This dual role of the computer adds to Bax's (2003, 2011a) conceptualisation of an integrated CALL environment (see Table 2, Section 2.2). In this author's terms, the position of the computer within the curriculum is defined solely in terms of its role as a tool and, within student activity, the definition of the interaction with the computer seems somewhat marginal, if not vague ("some interaction with the computer through the lessons" (Bax, 2003: 21).

Based on the results of Case Study One, a more precise formulation of the role of the computer within student activity which reflects the reciprocal role elucidated above could be considered. Such a formulation could also incorporate the feature of triadic interaction, a synthesis of which will be addressed in Section 10.3. A more meaningful definition of student activity in Bax's (2003) model could, therefore, read "Frequent interaction among students including within triadic interaction involving work at, with and around the computer".

This understanding of the role of the computer derived from the pupils' perceptions led further to the development of CALL texts which serve to provide an empirical base for establishing the way in which an integrated CALL scenario could contribute to interaction. Table 23 draws on one of the interaction scenes observed in Case Study One to illustrate, in the form proposed by Chapelle (2000) for representing CALL texts (see Table 9, Section 5.2.5.2) and which also goes one step beyond simply relating the texts to the role of the computer (compare Table 18, Section 7.5), to providing a clear description of the setting.

Table 23 Examples of CALL texts illustrating the social (mediational) functions of the computer in defining triadic interaction as well as the respective description of the setting based on an observation scene in Case Study One

Interaction between...	CALL text	Setting
Learner-computer-Learner	Stud. 2: Mach man Design, ne. ((*Explores the programme with the mouse*)) Stud. 1: Willst du Design? Stud. 2: Ja, dann haben wir…Ich finde es aber süß … Stud. 1: …. Stud. 2: … It's O.K. ((Slightly giggles)) Stud. 2: ((*Simultaneously begins to explore with the arrow keys*)) *Computer drop down menu displays possible background formats* Stud. 2: ... Welches nehmen wir? Stud. 1: … ((*Points at screen*, makes a suggestion and confers with Stud. 2 and then with Stud. 3)) Stud. 1(?): It's O.K.	Triadic interaction in which the computer functions as tool and as social mediator (shaping interaction by facilitating communication, external representation of shared understandings, thought processes and product co-construction).

In a similar manner to the way in which Song (2010) defines cultural context as embodying multiple social factors (see Section 3.4.1), the definition of this particular integrated CALL setting not only identifies these features, but illustrates the manner in which they impact on each other and, consequently, explicates the nature of the interaction of the subjects.

From a sociocultural perspective, and as outlined in Table 5 (Section 3.5), once understood and orchestrated within this tenet, context has the potential to enable learners to engage in a variety of social forms which allow them to experience learning at the deeper level. In Table 5, "appropriation" is the term used to denominate one form of deep learning which can be supported.

Appropriation, according to Rogoff (1995) as cited in Lantolf and Thorne (2006: 158) defines processes such as those perceived by the pupils in their interaction (thinking, representing, planning) as active processes which facilitate collaboration since it is through these very processes that individuals take on responsibility for the joint products they create with others.

From the learner perspective, it can be seen that it is this aspect of the computer mediating these shared processes which is most noteworthy. This can be ascertained based on the fact that some aspect of this shared experience was identifiable in all three descriptors coming out of the data. Whether referring to the computer as facilitating a shared experience in general or referring specifically to the computer as an efficient tool and social medium of support, there was pervasive evidence from the pupils' perspective of the computer playing a key mediational role among them. This was seen in the consistent mention of the actual co-construction process as well as of the ultimate goal of sharing products through the multimedia functions offered by the computer.

In other words, it is in the creation of this activity constellation that conditions for learning such as those espoused by Hubbard (2009), and consequently, those identified in Case Study One (see discussion in Section 7.5.2), can be achieved.

10.2 The call for normalisation and the integrated CALL classroom

As had been alluded to in the Pilot Study, once the initial lustre of the appearance of the computer within the classroom has dissipated, it is not unlikely that pupils begin seeing the integrated CALL classroom as offering "a normal lesson". This acceptance can be seen as a very first step in the normalisation of CALL, comparable with the significance Chambers and Bax (2006) ascribe to the issue of logistics in this process. In this context, the positioning of the computer in the classroom is aligned with the facility with which it can be accessed by pupils and used by the teacher.

In Case Study Two, this issue of logistics as it relates to the computer as a complementary resource rather than a central (isolated) technological focus in the classroom experience, was evident in the fact that both during pupils' interaction in off-computer preparatory work as well as during their work around the computer, they assumed different, but complementary roles which led to what can be described as a balanced learning experience.

This means that the computer, as an essential element in the creation of the joint presentation, used at one specific phase in this process, served as "a useful tool, in its place alongside other tools" (Bax, 2011b: 245). In other words, moved from centre stage to a position of complementary support, the computer "comes to be seen as something normal" (Bax, 2011b: 245).

A number of links can also be made with regard to the interaction in these two "locations" in this integrated CALL scenario and the key issues raised in Chapter

Three on the nature of interaction from a sociocultural perspective in response to Research Question Three:

Which roles do pupils assume in their interaction within the one-computer classroom in both off-computer and on-computer tasks and can these roles be said to be valuable to the learning conditions in the foreign language classroom?

In this Case Study Two, this issue of context as it relates to language use is seen to feature prominently in the discussion on the specific roles assumed by the pupils.

As revealed in the research, while organising the task in a preparatory off-computer discussion, pupils are seen to be assuming distinguishable roles which can be clearly identified as they negotiate the task in their native language (see discussion in Section 8.2.1.2). This contrasts, however, with communication-oriented exchanges in which learners are expected to be engaged in such open "unsupervised" work in the language classroom (see Section 3.4.2.1).

In this instance, rather than providing an opportunity to communicate in the L2, the context lends itself to a discussion in the L1 in which a social framework for the completion of the task (a coordinator/leader who moderates the decision-making process among individual contributors) is established. Here, the role of language can be seen predominantly in terms of its cultural context of use.

In this sense, and as referred to in the previous section, Song's (2010) understanding of context as a cultural phenomenon is again applicable. In other words, it is not just in the relationship between the participants in their established as well as assumed roles (situational context) that determine the choice and the impact of the language in use. As explained in Section 3.4.1, it is this cultural context or the actual social roles played by the participants which has an even greater impact on the use to which language is put. It is the fact that during their discussion they arrive at decisions which affect the quality of the product they will produce (for example, deciding on the selection of resources for their research) – factors related to the group's background as a community – that distinguishes this context of use as one which impacts positively on the learning experience. These factors include, for example, their shared understanding of the use of L1 as a means by which they can make clear and sound decisions about the way they manage the task.

This suggests that the roles established and expected within this community of practice along with their shared understandings act to determine the degree of

efficiency and the effectiveness with which the task is approached and herein lies one definition of the way in which the learning experience is positively impacted on.

Later on, when the context changes somewhat as pupils begin to work together on the product, the L1 then serves additionally as the medium via which they are able to bring their ideas together to produce a content-appropriate and well-structured document.

The roles which pupils are observed to be assuming in this latter interaction, in addition to being less distinguishable than in their off-computer work, also support the view that cultural factors are key in contributing to conditions which can be said to improve the learning experience. In this case, it is the unified interplay of the roles (see discussion in Section 8.3) which contribute to learning efficiency, learning effectiveness, access and convenience.

As presented in Chapter Eight, it is the semiotic function, not just of L1, but also of the computer, which interact with pupils' interweaving roles and which consequently constitute the cultural factors framing the interaction. As represented in Figure 8.4. (Section 8.2.1.4) and further detailed in Table 21 (Section 8.2.1.5), it is the understandings shared by the pupils regarding the role of the computer and its impact on their interaction which provide evidence of the manner in which the computer can be seen as integrated into the classroom experience, that is, as a tool as well as a social "determinant".

In returning to Bax's (2003, 2011a) call reiterated at the beginning of this section, it therefore becomes evident that the integrated CALL classroom, as defined by the learners in Case Study Two, is one in which the computer is subsumed within the social fabric of the context to the extent that its role becomes inextricably intertwined (invisible) with those of the pupils.

This social framework, as I have referred to it, is not one in which the computer has been set up as simply an additional piece of technology, but one in which the interaction in which pupils are engaged incorporates its use at a social level.

This coincides with Bax's (2011a) own revisited perspective of "normalisation [depending] on far more than the attributes of the technology itself or any other sole agent, and that it involves a host of social and cultural elements operating together in complex ways" (Bax, 2011a: 13).

It is in this way that this call for normalisation can be said to be represented to some extent in the interaction identified among the pupils in this case study and which, consequently, demonstrates the value which can be ascribed to such a constellation.

The potential of the contexts defined in this research has also been supported by Collembet-Sankey's (1997) view (cited in Chapelle, 2000) of the "dynamics" of the context in learners' development above and beyond the linguistic level. While her focus was on NBLT, as has been seen in this present research, similar goals can be achieved in non-networked CALL contexts as well. In this sense, Case Study Two is an example of an in-class attempt "to develop a more complex set of abilities" (Chapelle, 2000: 219). Chapelle cautions, however, that "[w]hen the goals of an activity are to create conditions for interaction and reconfiguration of classroom culture, methods of evaluation must focus on interactions within the classroom culture – slipperier objectives than those involving development of aspects of grammatical competence, for example" (Chapelle, 2000: 219).

Table 24, therefore, presents the CALL texts which illustrate the complexity of the social roles established on the basis of the computer's function as a social 'determinant' in this context (see also Figure 8.5, Section 8.2.1.5).

Table 24 Examples of CALL texts illustrating the social (mediational) functions of the computer within triadic interaction as well as the respective description of the setting based on pupils' perceptions in Case Study Two

Interaction between...	CALL texts	Setting
Learner-computer-Learner	"…it **gave us a common focus** and **encouraged us to cooperate**." "…a **collaborative effort** because **everyone worked together**……**everyone's skills came into play**…everyone got **to put their ideas in one place at one time** instead of putting down your own ideas in separate places then putting them together." ."…because **we worked as a group, we were able to handle certain obstacles** that arose along the way." "I **learned vocabulary from various members of the group**." "**Cooperative** and lively – they **made significant contributions to the success of the project**."	Triadic interaction in which the computer functions as a social (mediational) "determinant" in defining the roles of the participants

In conclusion, it can be said that the role of the context as defined from a sociocultural perspective in which the cultural factors act to support the social framework of learning, as opposed merely to the achievement of specific linguistic gains, is decisive in setting the stage for conditions of learning which can better facilitate the general learning experience of pupils.

10.3 Interaction and its contextual features

Having viewed the role of the computer within interaction and the role of this cultural context in contributing to conditions for improving learning and supporting a logistically normalised CALL environment, it follows that there are further specific contextual features which help to define the value of the integrated CALL classroom. In Case Study Three, these complementary features were explored by addressing Research Question Four:

How do pupils perceive their roles and that of the computer in triadic interaction within the one-computer classroom and from which perspective(s) do they view this interaction as impacting on the learning experience?

This means that by replicating the learning scenario as far as possible with the focus on the interaction as reflected on by the learners, an attempt was being made to tease out and extrapolate specific contextual factors operating in this constellation.

Againm by extracting understandings from the learners' perceptions of their learning experience, a clear link could be made to the discussion in Section 3.4.3 on the participant perspective of learner interaction. Here the discussion focuses on the way in which learner interaction is influenced by the roles the participants assume.

In Case Study Three, the pupils' perspective on the issue of roles brings more clearly to the fore the extent to which the computer is involved as a tool and at the same time as a companion or participant in the achievement of the learning goal. There is a clear dual role recognisable in the pupils' articulation of the manner in which the computer forms part of the interaction. This distinction again elucidates the triadic interaction taking place in this constellation by isolating the contextual features of the computer from the material as well as from the symbolic perspective (see Table 22, Section 9.3.1 and the discussion in Section 9.4).

Table 25's representation of the CALL texts produced in Case Study Three illustrates the distinction between these two perspectives.

Table 25 Examples of CALL texts illustrating the material and symbolic (mediational) functions of the computer within triadic interaction as well as the respective description of the setting based on an observation scene in Case Study Three

Interaction between...	CALL text	Setting
Learner-computer-Learner	"Adding the way **we can structure our ideas more clearly** than in a way when we are just talking to each other" "We focused most…on **how it looks to the others**" "It helps us with our ideas…for the others to see our results and ideas" "Everything which we did, our results, **could only be seen on the computer**. Without it we couldn't do a PowerPoint presentation" "It's just more professional"	Triadic interaction in which the computer functions in its mediational role as tool (material) supporting pupils as they engage in the collaborative co-construction of a joint product
	"Everybody says "**look at the computer**"…and then we place like this and this...**to insert our ideas** in the presentation" "Everybody makes an idea and then **we just try it on the screen** and then the result is the one which looks the best. **This is part of the communication**" "The computer made it **possible to realize our ideas**" "…we payed **more attention to the computer and the stuff you can do** on the computer.	Triadic interaction in which the computer functions as a social mediator (symbolic) supporting pupils as they engage in the collaborative co-construction of a joint product

In other words, the architectural richness of this integrated CALL classroom can be more clearly understood by viewing contextual factors from their inherent and multiple functions.

10.4 AT and the process of interaction

In Chapter Four, AT is presented as a possible framework from which the interaction in an integrated CALL classroom can be analysed and better understood. In each of the case studies conducted in this research endeavour, it has been used to explain not simply the relationships identified in the data, but at another level, to consider the different "planes" of interaction occurring at what I refer to as the AC of the learning environment.

Swain et al. (2011) defines the potential of this framework as providing “a way of understanding complex, dynamic situations like a classroom or classroom conversations. It can make visible the relationship between the individual and the collective, the private and social planes” (Swain, 2011: 98). Additionally, Swain (2011) refers to the representation of these relationships and the different levels at which they are played out as dynamic in nature: “Part of the messiness and power of Activity Theory comes from this notion that none of these categories or their relationships is static” (Swain et al., 2011: 101).

It is in these terms which the exploration of the interaction in the constellations orchestrated in this research has been considered. In other words, the conditions identified for improving learning can be seen as occurring on the material level (efficiency and convenience) as well as on the symbolic level (effectiveness and access) in a similar way to that in which the mediational means (the computer and the language in use) can be seen to be in operation, both on a material and on a symbolic level.

In the presentation of each of the case studies, the pupils’ perspectives of their understanding of the learning environment and their learning experience provide an overview of the base of the AS of which they are a part. As a community with complementary skills, established and expected roles and shared understandings, they act together in distinctive yet complementary ways.

With this cultural background as a basis, the various representations of the process of interaction in the terms previously mentioned offer a comprehensive overview of what is indeed a complex system (see Figures 6.4, 7.6, 7.7, 8.4, 8.5 and 9.5).

In these illustrations, firstly, the subjects and subject collective are identified based on the role and/or function they assume.

Secondly, the mediational means, which can overlap with the subject depending on the role that it is perceived to play, are determined on the basis that they support the learning process in either a material or symbolic sense.

Thirdly, the object of the activity or the actual task at hand is defined in terms of the process to be carried out in achieving the general learning goal.

Finally, at the AC, the relationships and the levels of interaction are amplified to detail how the interaction is perceived and, consequently, to provide a basis on which claims can be made about the way in which learning conditions can be said to be improved or facilitated in this dynamic process of interaction.

Throughout the case studies one important focus was also making a distinction between the various perspectives from which the activity taking place at the AC could be examined. This allowed for a deeper understanding of the activity as it represented how the community with its shared rules and division of labour (roles), the subjects in their various social relationships and the individual participants (including the computer) can be viewed as intertwining at different layers of interaction – again showing the dynamism supported within the system.

10.5 Summary

This discussion has sought to bring together the theoretical and conception issues identified in the literature and the perceptions on interaction occurring in actual classrooms as they relate to improving conditions for learning in the CALL classroom. From a sociocultural standpoint, the role of the computer within interaction has positive implications for the learning context to the extent that it supports learners in a collaborative learning experience so that learning can be seen to be taking place at a deep level, involving some level of appropriation, for example.

In this respect, this CALL context can be said to be approximating some degree of normalisation if at least from a logistic perspective, learners have easier access to the computer and see it as one among other mediational means which they can utilise during different phases of work or in different social learning arrangements, such as group or project work.

From the results of the case studies, it can be said that the contextual features of the computer as perceived by pupils lie in its major attributes as a tool as well as in its role as a social determinant. Both these features therefore represent the two contextual perspectives by which the integrated CALL classroom defines itself.

Finally, the research has highlighted the specific elements of the interaction, as represented and explicated within an AT framework and as illustrated through CALL texts. These representations offer a structured and concrete basis for making claims regarding the way in which the nature of interaction as an intangible and complex occurrence can be understood to be contributing to improving conditions for learning.

10.6 Projections for further research

As established in this research, the architectural features of the one-CALL classroom, which represents one model of an integrated CALL classroom, can be effectively explored by locating moments in the interaction between subject and

object which are mediated by both the subjects themselves as well as the computer as a tool and in its social function at different phases during a “normal” lesson.

As seen in the previous section, the value of this integrated CALL environment can best be seen in terms of the nature of the interaction which is facilitated by the computer which Van Lier (2002) confirms as an important contribution to the quality of the educational experience. This he regards as part and parcel of research in the field of “Ecological-educational linguistics – systematic investigation of emergence, affordance, triadic interaction and quality…requiring conceptual clarification, the location of new forms of evidence through description and analysis, the elaboration of contextual research procedures, and plausible documentation” (Van Lier, 2002: 149).

These case studies have, therefore, made a contribution to this needed qualitative form of empirical research by offering such description and analysis against the backdrop of AT and through the production of CALL texts grounded in the perspectives of the learners themselves.

While the research has limited its focus to that of the one-CALL classroom in which one laptop is available to support the collaborative creation of a joint language product, future research can explore the sociocultural dimension of the flipped version of a LTE where attempts are being made to normalise other digital media.

One such environment which offers this potential is the Interactive Whiteboard (IWB) classroom.

This setting approximates an integrated CALL classroom in that it incorporates the IWB as a “normal” part of the classroom set up.

While researchers such as Aufenanger and Bauer (2010), cited in Bohrer et al. (2013), express concerns about the limitations of the IWB in terms of supporting teacher-centeredness, the IWB can also contribute to activating learners and supporting interaction. One recent study exploring the potential of the IWB to support learning in group work around the board, offers an initial contribution in the research direction being proposed here.

In this study, Bohrer et al. (2013), in observing learners involved in a collaborative group task around the IWB, claim that pupils engage more actively in the learning process based on the measure of attention which the IWB facilitates. This is similar to the findings in this present research regarding the role of the computer in streamlining the focus of the learners. Additionally, researchers in this field attribute particular value to the active co-constructive and interchangeable roles in which

pupils are involved during this process, as this represents one key way in which collaborative learning in groups can be supported (Deaney et al. 2006, cited in Bohrer et al., 2013).

Though these results are indicative of this collaborative process, it provides little detail on how this interaction can specifically support the learning process and on the conceptual framework used to examine and explicate the actual moments of interaction. This could, of course, be attributed to the fact that the observation was conducted within the context of a one-day research project.

This is, therefore, one gap which future research can fill. Studies looking into the interaction in which learners are involved as they work collaboratively with new media, need to consider more closely not just the way learning is supported during moments of interaction at different phases of learning, but, as hinted at above, how the specific constellation might be approximating a normalisation of the use of the computer.

This will certainly offer a way forward in understanding more precisely the ways in which digital media can be seen as taking up its place within the classroom as opposed to simply residing in the school (Peterhans & Sagl, 2011, cited in Bohrer et al., 2013).

In the CALL classroom, this also implies finding further validation for the use of L1 in the L2 classroom which, as recent research suggests, is a natural occurrence in foreign language learning (Lasito & Storch, 2013). This research field remains a very fertile one, particularly within the parameters of sociocultural understandings of learning. Research examining the CALL classroom, therefore, needs to continue to extend on this line of argumentation.

While this study did not specifically focus on the use of language within the interaction, the use of L1 was generally acknowledged in its semiotic role as pupils turned to their L1 to talk about the object of their focus (the visual representation of their ideas), in what can certainly be described as communicative exchanges at a meta-level.In this vein, further research can also consider how meta-talk develops in this interaction and locate this development within the architectural structure of the integrated CALL classroom.

Using an AT framework to this end, would be therefore one further recommendation coming out of this research. As Thorne (2004) suggests, “[t]hough Activity Theory is also used descriptively and analytically as a diagnostic framework, its essence is to

then take a situation or condition and transform it in an effort to create something better" (Thorne, 2004: 55).

This suggests that the AT framework can offer CALL researchers a tangible instrument to advance the analysis of a particular constellation under consideration, by also allowing for the location of further contextual factors at the AC. In this way, both factors which contribute to and detract from the learning experience can be identified in order to make recommendations for improvement.

As seen in this research, this can be supported by the production of CALL texts which align the interaction with the specific features of the setting. In this way, according to Chapelle (2000), creating such a collection of texts which provide insights into a variety of CALL settings "...would add complexity to the simple dichotomy of language use (target language use to display [linguistic] ability vs. target language use to communicate and negotiate meaning." (Chapelle, 2000: 208). This can certainly be seen as a step in the direction of advancing the process of *unifying* CALL (Levy & Hubbard, 2005) as a field approaching classroom research in an integrated manner.

This further suggests, as has been the main focus of this research, that the call is now not simply for normalisation as expressed by Bax (2011), but towards a more conceptual understanding of CALL which moves away from isolating the technology as a device in the service of teachers, to a contextual feature in the learning experience of the pupils. As this research has shown, it is in this way that the social function of the computer, as an integrated feature in this experience in and beyond the classroom, can be appropriately located in an era in which technology environments can neither be limited to fixed learning spaces nor be conceived simply as a tool isolated from or as an appendage to the learning process.

In short, should these projections for further research be taken up, the field of CALL will be enriched with a stronger empirical base not only for making claims regarding different levels of interaction and mediation constituting the pivotal contextual features of the integrated CALL classroom, but also for substantiating how this constellation can be regarded as impacting positively on the learning experience in terms of improving conditions for learning.

10.7 Closing remarks

This research adopted as its starting point, a revisited concept of the digital divide in terms of the divide between an effective and ineffective CALL classroom context.

While the traditional view of large numbers of computers constituting a technology-rich learning environment has generally been accepted, as the research has shown the one-CALL context has potential for promoting the type of collaborative exchange which can be said to support effective learning.

The possibility of this constellation being a realistic option for establishing the use of the computer in the L2 classroom in a way which can be said to be normalised at least at the level of logistics has also been explored in this work. The research, therefore, closes with the reflection that normalisation as a concept can be integrated into discussions on bridging the divide between effective and ineffective use at the classroom level.

This is particularly relevant in the current CALL landscape in which, as indicated in the previous section, the use of IWBs and mobile devices are being more widely exploited in the foreign language classroom, but where the question of availability still prevails and where “given the significant expense in hardware and necessary training other alternatives may be worth exploring” (Hockly, 2013: 357).

Additionally, as researchers continue to propose, one critical issue in the normalisation of CALL is the definite need to support the type of learning environment in which learners are given opportunities to interact with each other and with the available mediational means in a rich socially supported learning space (Ciampi, 2014; Mahdi, 2013; Chou et al., 2012). As these latter authors specify, it is through the provision of CALL environments which bear these characteristics that pupils will be enabled to develop the types of skills which are needed for the 21st century.

In short, it can be said that this research supports the view that regardless of the technology opted for or the constellation orchestrated, the key emphasis should be on the extent to which the nature of the learning experience can be defined as effective, as evidenced by learners supported in effective interactive processes. In other words, integrating the computer into the classroom in the context of normalisation suggests that less (fewer computers) might mean more (meaningful collaboration) in improving the conditions for learning in CALL.

List of references

Adelman, C. (2010). Substantive theory. In A. Mills, G. Durepos, & E. Wiebe (eds.) *Encyclopedia of Case Study Research* (pp. 907-909). Thousend Oaks: SAGE Publications. Available online at: https://archive.org/stream/2.encyclopediaOfCaseStudyResearch#page/n929/mode/2up Accessed: 01.04.2014.

Atkinson, D. (2011a). Introduction: Cognitivism and second language acquisition. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 1-23). London: Routledge.

Atkinson, D. (2011b). A sociocognitive approach to second language acquisition: How mind, body, and world work together in learning additional languages. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 143-166). London: Routledge.

Baloian, N., Berges, A., Buschmann, S., Gassner, K., Hardings, J., Hoppe, H. U., & Luther, W. (2002). Document management in a computer-integrated classroom. In J. M. Haake & J. A. Pino (eds.) *Proceedings of CRIWG 2002, 8th International Workshop on Groupware, LNCS*, (pp. 34-46). Heidelberg: Springer-Verlag.

Bax, S. (2003). CALL – past, present, and future. *System*, 31, 13-28.

Bax, S. (2011a). Normalisation revisited: The effective use of technology in language education. *International Journal of Computer-Assisted Language Learning and Teaching*, 1(2), 1-15.

Bax, S. (2011b). Digital education: Beyond the “Wow” factor. In M. Thomas (ed.) *Digital Education: Opportunities for Social Collaboration* (pp. 239-256). New York: Palgrave Macmillan.

Beatty, K. (2003). *Teaching and Researching Computer-Assisted Language Learning*. Essex: Pearson Educational Limited.

Beatty, K. (2013). *Teaching and Researching Computer-Assisted Language Learning*. 2nd Ed. New York: Routledge.

Block, D. (2003). *The Social Turn in Second Language Acquisition*. Edinburgh: Edinburgh University Press.

Bødker, S. (1997). Computers in mediated human activity. *Mind, Culture and Activity: An International Journal*, 4(3), 149-158.

Bogdan, R. C., & Biklen, S. N. (1992). *Qualitative Research for Education*. 2nd Ed. Boston: Allyn and Bacon.

Bohrer, C., Gorzolla, P., Klees, G., & Tillmann, A. (2013). Interaktive Whiteboards in der Gruppenarbeit: gesteigerte Aufmerksamkeit in unterschiedlchen Rollen. In C. Bremer & D. Krömker (eds.) *E-Learning zwischen Vision und Alltag* (pp. 107-117). Münster: Waxmann.

Bowles, M. (2010). The think-aloud controversy in second language research. New York: Routledge.

Boyd, M., & Miller Maloof, V. (2000). How teachers can build on student-proposed intertextual links to facilitate student talk in the ESL classroom. In J. K. Hall & Verplaetse, L. S. (eds.) *Second and Foreign Language Learning Through Classroom Interaction* (pp. 163-182). Mahwah: Lawrence Erlbaum Associates.

Chambers, A., & Bax, B. (2006). Making CALL work: Towards normalisation. *System*, 34, 465-479.

Chapelle, C. (1997). CALL in the Year 2000: Still in search of research paradigms? *Language Learning and Technology*, 1(1), 19-43.

Chapelle, C. (2000). Is networked-based learning CALL? In J. Egbert & G. Petrie (eds.) *CALL Research Perspectives* (pp. 204-228). Mahwah: Lawrence Erlbaum Associates.

Chapelle, C. (2001). *Computer Applications in Second Language Acquisition.* Cambridge: Cambridge University Press.

Chapelle, C. (2007). Challenges in evaluation of innovation: Observations from technology research. *Innovations in Language Learning and Teaching*, 1(1), 30-45.

Chapelle, C. (2010). The spread of computer-assisted language learning. *Language Teaching*, 43(1), 66-74.

Chapelle, C., & Jamieson, J. (2008). *Tips for Teaching with CALL: Practical Approaches to Computer-Assisted Language Learning*. New York: Pearson Education, Inc.

Ciampa, K. (2014). Learning in a mobile age: An investigation of student motivation. *Journal of Computer Assisted Learning*, 30, 82-96.

Cowie, N. (2009). Observation. In J. Heigham & R. A. Croker (eds.) *Qualitative Research in Applied Linguistics: A Practical Introduction* (pp. 165-181). London: Palgrave Macmillan.

Croker, R. A. (2009). An introduction to qualitative reseach. In J. Heigham & R. A.

Croker (eds.) *Qualitative Research in Applied Linguistics: A Practical Introduction* (pp. 3-24). London: Palgrave Macmillan.

Crook, C. (1994). *Computers and the Collaborative Experience of Learning*. London: Routledge.

Cuban, L. (2001). *Oversold and Underused: Computers in the Classroom*. Massettusetts: Harvard University Press.

Dailey-O'Cain, J., & Liebscher, G. (2009). Teacher and student use of first language in foreign language classroom interaction: Functions and applications. In M. Turnbull & J. Dailey-O'Cain (eds.) *First Language Use in Second and Foreign Language Learning* (pp. 131-144). Bristol: Multilingual Matters.

Dam, L., Legenhausen, L., & Wolff, D. (1990). Text production in the foreign language classroom and the word processor. *System*, 18(3), 325-334.

de Bot, K., Lowie, W., & Verspoor, M. (2007). A dynamic systems theory approach to second language acquisition. *Bilingualism: Language and Cognition*, 10(1), 7-21.

Denzin, N. K., & Lincoln, Y. S. (Eds.) (2005). *Handbook of Qualitative Research*. 3rd Ed. Thousand Oaks: Sage Publications.

DiCamilla, F. J., & Antón, M. (2004). Private speech: A study of language for thought in the collaborative interaction of language learners. *International Journal of Applied Linguistics*, 14(1), 36-69.

DiCamilla, F.J., & Antón, M. (2012). Functions of L1 in the collaborative interaction of beginning and advanced second language learners. *International Journal of Applied Linguistics*, 22(2), 160-188.

Donnelly, D., McGarr, O., & O'Reilly, J. (2011). A framework for teachers' integration of ICT into their classroom practice. *Computers and Education*, 57, 1469-1483.

Dooly, M. (2011). Divergent perceptions of telecollaborative language learning tasks: Task-as-workplan vs. task-as-process. *Language Learning and Technology*, 15(2), 69-91.

Dörnyei, Z. (2007). *Research Methods in Applied Linguistics*. Oxford: Oxford University Press

Dörnyei, Z. (2009). Individual differences: Interplay of learner characteristics and learning environment. *Language Learning*, 59 (Supplement 1), 230-248.

Duff, P., & Talmy, S. (2011). Language socialization approaches to second

language acquisition: Social, cultural, and linguistic development in additional languages. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 95-116). London: Routledge.

DuFon, M. (2002). Video recording in ethnographic SLA research: Some issues of validity in data collection. *Language Learning and Technology*, 6(1), 40-59.

Egbert, J. (2005). Conducting research on CALL. In J. Egbert & G. Petrie (eds.) *CALL Research Perspectives* (pp. 3-8). Mahwah: Lawrence Erlbaum Associates.

Egbert, J., & Hanson-Smith, E. (1999). *CALL Environments: Research, Practice, and Critical Issues*. Alexandria: Teachers of English to Speakers of Other Languages.

Egbert, J., & Yang, Y. (2004). Mediating the digital divide in CALL classrooms: Promoting effective language tasks in limited technology contexts. *ReCALL*, 16(2), 280-291.

Ellis, R. (2005). Principles of instructed language learning. *System*, 33(2), 209-224.

Engeström, Y. (1993). Developmental studies of work as a test bench of activity theory: The case of primary care medical practice. In S. Chaiklin & J. Lave (eds.) *Understanding Practice: Perspectives on Activity and Context* (pp. 64-103). Cambridge: Cambride University Press.

Engeström, Y. (1999). Innovative learning in work teams: Analysing cycles of knowledge creation in practice. In Y. Engeström, R. Miettinen, R., & R.-L. Punamäki (eds.) *Perspectives on Activity Theory* (pp. 377-406). Cambridge: Cambridge University Press.

Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical Reconceptualisation. *Journal of Education and Work*, 14 (1), 133-156.

Ensor, S., Kleban M., & Rodrigues, C. (2013). Telecollaboration in historical spaces: Inservice and preservice foreign language teachers imagine future roles for online intercultural exchanges. *EUROCALL (European Computer Assisted Language Learning Conference)*. Évora: Portugal. Available online at: http://edutice.archives-ouvertes.fr/edutice-00870897 Accessed: 01.04.2014.

Firth, A., & Wagner, J. (1997). On discourse, communication and (some) fundamental concepts in SLA research. *The Modern Language Journal*, 81(3), 285-300.

Freeman, D. (2009). What makes research 'qualitative'. In J. Heigham & R. A. Croker (eds.) *Qualitative Research in Applied Linguistics: A Practical Introduction* (pp. 25-41). London: Palgrave Macmillan.

Gaible, E. (2009a). *Survey of ICT and Education in the Caribbean. Volume 1: Regional Trends and Analysis*. Washington, DC: infoDev. Available online at: http://www.infodev.org/infodev-files/resource/InfodevDocuments_441.pdf. Accessed: 01.04.2014.

Gaible, E. (2009b). *Survey of ICT and Education in the Caribbean. Volume 2: Country reports*. Washington, DC: infoDev. Available online at: http://www.infodev.org/infodev-files/resource/InfodevDocuments_585.pdf. Accessed: 01.04.2014.

Gánem Gutiérrez, G.A. (2006). Sociocultural theory and its application to CALL: A study of the computer and its relevance as a mediational tool in the process of collaborative activity. *ReCALL*, 18(2), 230-251.

Gass, S. (1998). Apples and oranges: Or, why apples are not oranges and don't need to be. A response to Firth and Wagner. *The Modern Language Journal*, 82(1), 83-90.

Gass, S., & Mackey (2007). *Data Elicitation for Second Language Research*. Mahwah: Lawrence Erlbaum Associates.

Government of Trinidad and Tobago. (2012). *Trinidad and Tobago National ICT Plan 2012-2016*. Available online at: http://cci.planning.gov.tt/sites/default/files/Trinidad%20and%20Tobago%20Final%20Draft.pdf. Accessed: 01.04.2014.

Grgurović, M., Chapelle, C., & Shelley, M. C. (2013). A meta-analysis of effectiveness studies on computer technology-supported language learning. *ReCALL*, 25(2), 185-198.

Gumock, J.-E., Debski, R., & Wigglesworth, G. (2005). Oral interaction around computers in the project-oriented CALL classroom. *Language Learning and Technology*, 9(3), 121-145.

Guth, S., & Helm, F. (2010). Introduction. In S. Guth and F. Helm (eds.) *Telecollaboration 2.0: Language, Literacy and Intercultural Learning in the 21st Century* (pp. 13-38). Bern: Peter Lang.

Hampel, T. & Keil-Slawik, R. (2001). sTeam: Structuring information in team-distributed knowledge management in cooperative learning environments. *ACM Journal of Educational Resources in Computing*, 1(2), 1-27.

Hancock, M. (1997). Behind classroom code-switching: Layering and language choice in L2 learner interaction. *TESOL Quarterly*, 32(2), 217-235.

Hardman, J. (2007). Making sense of the meaning maker. Tracking the object of

the activity in a computer-based mathematics lesson using activity theory. *International Journal of Education and Development using Information and Communication Technology*, 3(4), 110-130.

Heigham, J., & Croker, R. A. (eds.) (2009). *Qualitative Research in Applied Linguistics: A Practical Introduction*. London: Palgrave Macmillan.

Hellermann, J. (2008). *Social Actions for Classroom Language Learning*. Clevedon: Multilingual Matters Ltd.

Hockly, N. (2013). Technology for the language teacher: Interactive whiteboards. *ELT Journal*, 67(3), 354-358.

Hood, D. (2009). Case Study. In J. Heigham & R. A. Croker (eds.) *Qualitative Research in Applied Linguistics: A Practical Introduction* (pp. 66-90). London: Palgrave Macmillan.

Hoppe, H. U., & Gassner, K. (2002). Integrating collaborative concept mapping tools with group memory and retrieval functions. In G. Stahl (ed.) *Proceedings of CSCL 2002, Computer Support for Collaborative Learning: Foundations for a CSCL Community* (pp. 716-725). Hillsdale: Lawrence Erlbaum Associates.

Hoppe, H. U., & Plötzner, R. (1999). Can analytical models support learning in groups? In P. Dillenbourg (ed.) *Collaborative Learning: Cognitive and Computational Approaches. Advances in Learning and Instructions* (pp. 147-168). Oxford: Elsevier Science.

Hubbard, P. (2009). Introduction. In P. Hubbard (ed.) *Computer Assisted Language Learning, Volume 1: Foundations of CALL* (pp. 1-20). New York: Routledge.

Karpa, D., Eickelmann, B., & Grafe, S. (2013). *Digitale Medien und Schule: Zur Rolle digitaler Medien in Schulpädagogik und Lehrerbildung*. Immenhausen: Prolog-Verlag.

Kasper, G., & Wagner, J. (2011). A conversation-analytical approach to second language acquisition. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 117-142). London: Routledge.

Keil-Slawik, R. (2006). Durchgängige Infrastrukturen als Voraussetzung praktikabler eLearning-Lösungen. In D. Berntzen, M. Gehl & M. Hempel (eds.) *Zunkunftswerkstatt Lehrerbildung: Neues Lehren und Lernen durch E-Learning-Konzepten in der Lehrerbildung*, (pp. 9-26). Münster: Tagungsdokumentation, Münster, 07.07.2005.

Kern, R., & Warschauer, M. (2000). Introduction: Theory and practice in

networked-based language teaching. In M. Warschauer & R. Kern (eds.) *Network-based Language Teaching: Concepts and Practice* (pp. 1-19). Cambridge: Cambridge University Press.

Kessler, G. (2013). Collaborative language learning in co-constructed participatory culture. *CALICO Journal*, 30(3), 307-322.

Kirchhoff, S., Kuhnt, S., Lipp.P., & Schlawin, S. (2010). *Der Fragebogen: Datenbasis, Konstruktion und Auswertung*. 5th Ed. Wiesbaden: Springer Fachmedien.

Kuutti, K. (1996). Activity theory as a potential framework for human-computer interaction research. In B. Nardi (ed.) *Context and Consciousness: Activity Theory and Human-Computer Interaction* (pp. 17-44). Cambridge: The MIT Press.

Lafford, B. (2009). Toward an ecological CALL: Update to Garrett (1991). *The Modern Language Journal*, 93 (Focus Issue), 673-696.

Lamy. M.-N., & Goodfellow, R. (1999). "Reflective Conversation" in the virtual language classroom. *Language Learning and Technology*, 2(2), 43-61.

Lantolf, J. (2011). The sociocultural approach to second language acquisition: Sociocultural theory, second language acquisition, and artificial L2 development. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 24-47). London: Routledge.

Lantolf, J., & Pavlenko, A. (2001). (S)econd (L)anguage (A)ctivity theory: Understanding second language learners as people. In M. Breen (ed.) *Learner Contributions to Language Learning* (pp. 141-171). London: Longmann.

Lantolf, J., & Thorne, S. (2006). *Sociocultural Theory and the Genesis of Second Language Development*. Oxford: Oxford University Press.

Larsen-Freeman, D. (2007). Reflecting on the cognitive-social debate in second language. *The Modern Language Journal*, 91 (Focus Issue), 773-787.

Larsen-Freeman, D. (2011). A complexity theory approach to second language development/acquisition. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 48-72). London: Routledge.

Lasito & Storch, N. (2013). Comparing pair and small group interactions on oral tasks. *RELC Journal*, 44(3), 361-375.

Legenhausen, L., & Wolff, D. (1990). CALL in use – Use of CALL: Evaluating CALL software. *System*, 18(1), 1-13.

Legenhausen, L., & Wolff, D. (1991). Der Micro-Computer als Hilfsmittel beim Sprachenlernen: Schreiben als Gruppenaktivität. *Praxis des neusprachlichen Unterrichts*, 38, 346-356.

Leont'ev, A.N. (1981). The problem of activity in psychology. In J. Wertsch (ed.) *The Concept of Activity in Soviet Psychology* (pp. 37-71). Armonk: Sharpe.

Levy, M. (1997). *Computer-assisted Language Learning: Context and Conceptualisation*. Oxford: Oxford University Press.

Levy, M., & Hubbard, P. (2005). Editorial. Why call CALL "CALL"? *Computer Assisted Language Learning*, (18)3, 143-149.

Levy, M., & Stockwell, G. (2006). *CALL Dimensions: Options and Issues in Computer-Assisted Language Learning.* Mahwah: Lawrence Erlbaum Associates.

Li, S.C., & Choi, T.H. (2014). Does social capital matter? A quantitative approach to examining technology infusion in schools. *Journal of Computer Assisted Learning*, 30(1), 1-16.

Liebscher, G., & Dailey-O'Cain, J. (2005). Learner code-switching in the content-based foreign language classroom. *The Modern Language Journal*, 89(2), 234-247.

Lim, C.P., & Hang, D. (2003). An activity theory approach to research of ICT integration in Singapore schools. *Computes and Education*, 41, 49-63.

Mackey, A. (2002). Beyond production: Learners' perceptions about interactional processes. *International Journal of Educational Research*, 37, 379-394.

Mackey, A., Abbuhl, R., & Gass, S. (2012). Interactionist approach. In S. Gass & A. Mackay (eds.) *The Routledge Handbook of Second Language Acquisition* (pp. 7-23). London: Routledge.

Mackey, A., & Gass, S. (2005). *Second Language Research: Methodology and Design*. Mahwah: Lawrence Erlbaum Associates.

Mahdi, H.-S. (2013). Issues of computer assisted language learning: Normalization in EFL contexts. *International Journal of Linguistics*, 5(1), 191-203.

Mardis, M.A., Hoffman, E. S., & Rich, P. J. (2014). Trends and issues in qualitative research methods. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (eds.) *Handbook of Research on Educational Communications and Technology* (pp. 173-193). New York: Springer.

Mayring, P. (2002). Einführung in die Qualitative Sozialforschung. Weinheim: Beltz Verlag.

McCafferty, S.G., & Ahmed, M.K. (2000). The appropriation of gestures of the abstract by L2 learners. In J. Lantolf (ed.) *Sociocultural Theory and Second Language Learning* (pp. 199-218). Oxford: Oxford University Press.

McIntosh, P. (2004). Computers in Education: Sustainable and Effective Use. *Unpublished Report to the Ministry of Education, Trinidad and Tobago.*

McKay, S. L. (2006). *Researching Second Language Classrooms*. Mahwah: Lawrence Erlbaum Associates.

Merriam, S.B. (1998). *Qualitative Research and Case Study Applications in Education*. San Francisco: Jossey-Bass.

Merriam, S.B. (2002). *Qualitative Research in Practice: Examples for Discussion and Analysis.* 1st Ed. San Francisco: Jossey-Bass.

Meskill, C. (2005a). Metaphors that shape and guide CALL research. In J. Egbert & G. Petrie (eds.) *CALL Research Perspectives* (pp. 25-40). Mahwah: Lawrence Erlbaum Associates.

Meskill, C. (2005b). Triadic scaffolds: Tools for teaching English language learners with computers. *Language Learning and Technology*, 9(1), 46-59.

Moore, P. J. (2013). An emergent perspective on the use of the first language in the English-as-foreign-language classroom. *The Modern Language Journal*, 97(1), 239-253.

Müller-Hartmann, A., & Schocker-v. Ditfurth, M. (2008). Research on the use of technology in task-based language teaching. In A. Müller-Hartmann & M. Schocker-v. Ditfurth (eds.) *Aufgabenorientiertes Lernen und Lehren mit Medien: Ansätze, Erfahrungen, Perspektiven in der Fremdsprachendidaktik* (pp.12-64). Frankfurt: Peter Lang.

Müller-Hartmann, A., & Schocker-v. Ditfurth, M. (2010). Research on the use of technology in task-based language teaching. In M. Thomas & H. Reinders (eds.) *Task-Based Language Learning and Teaching with Technology* (pp. 17-40). London: Continuum.

Murray, G. (2009). Narrative inquiry. In J. Heigham & R. A. Croker (eds.) *Qualitative Research in Applied Linguistics: A Practical Introduction* (pp. 45-65). London: Palgrave Macmillan.

Nardi, B. (1996). Studying context: A comparison of activity theory, situated action models, and distributed cognition. In B. Nardi (ed.) *Context and Consciousness: Activity Theory and Human-Computer Interaction* (pp. 69-102). Cambridge: The MIT Press.

Norton, B., & McKinney, C. (2011). An identity approach to second language

acquisition. In D. Atkinson (ed.) *Alternative Approaches to Second Language Acquisition* (pp. 73-94). London: Routledge.

OECD. (2010). Education at a Glance 2010: OECD Indicators. Available online at: http://www.oecd.org/education/skills-beyond-school/educationataglance2010oecdindicators.htm Access: Password protected.

Ortega, L. (1997). Processes and outcomes in networked classroom interaction: Defining the research agenda for L2 computer-assisted classroom discussion. *Language Learning and Technology*, 1(1), 82-93.

Osuna, M., & Meskill, C. (1998). Using the World Wide Web to integrate Spanish language and culture: A pilot study. *Language Learning and Technology*, 1(2), 71-92.

Paavola, S., Lipponen, L., & Hakkarainen, K. (2002). Epistomological foundations for CSCL: A comparison of three models of innovative knowledge communities. In G. Stahl (ed.) *Proceedings of CSCL 2002, Computer Support for Collaborative Learning: Foundations for a CSCL Community* (pp. 24-32). Hillsdale: Lawrence Erlbaum Associates.

Richards, K. (2003). *Qualitative Inquiry in TESOL*. Basingstoke: Palgrave Macmillan.

Richards, K. (2006). "Being the teacher": Identity and classroom conversation. *Applied Linguistics*, 27(1), 51-77.

Rolin-Ianziti, J., & Varshney, R. (2008). Students' views regarding the use of the first language: An exploratory study in a tertiary context maximizing target language use. *The Canadian Modern Language Review*, 65(2), 249-273.

Rüschoff, B., & Ritter, M. (2001). Technology-enhanced langauge learning: Construction of knowledge and template-based learning in the foreign language classroom. *Computer Assisted Language Learning*, 14(3-4), 219-232.

Sade, L. A. (2011). Emerging selves, language learning and motivation through the lens of chaos. In G. Murray, X. Gao & T. Lamb (eds.) *Identity, Motivation and Autonomy in Language Learning* (pp. 42-56). Bristol: Multilingual Matters.

Scott, V. M., & De La Fuente, M. J. (2008). What's the problem? L2 learners' use of the L1 during consciousness-raising, form-focused tasks. *The Modern Language Journal*, 92(1), 100-113.

Solomon, G., Allen, N., & Resta, P. (2003). *Toward Digital Equity: Bridging the Divide in Education*. Boston: Allyn and Bacon.

Song, L. (2010). The role of context in discourse analysis. *Journal of Language Teaching and Research*, 1(6), 876-879.

Stake, R. (1995). *The Art of Case Study Research*. Thousand Oaks: Sage Publications.

Stockwell, G., & Tanaka-Ellis, N. (2012). Diversity in environments. In G. Stockwell (ed.) *Computer-Assisted Language learning: Diversity in Research and Practice* (pp. 71-89). Cambridge: Cambridge University Press.

Storch, N. (2002). Patterns of interaction in ESL pair work. *Language Learning*, 52(1), 119-158.

Swain, M. (2006). Languaging, agency and collaboration in advanced second language proficiency. In H. Byrnes (ed.) *Advanced Language Learning: The Contribution of Halliday and Vygotsky*. London: Continuum.

Swain, M., Kinnear, P., & Steinman, L. (2011*). Sociocultural Theory in Second Language Education: An Introduction Through Narratives*. Bristol: Multilingual Matters.

Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *The Modern Language Journal*, 82(3), 20-37.

Swain, M., & Lapkin, S. (2002). Talking it through: Two French immersion learners' response to reformulation. *International Journal of Educational Research*, 37(6-7), 285-304.

Thoms, J., Liao, J., & Szustak, A. (2005). The use of L1 in an on-line chat activity. *The Canadian Modern Language Review*, 62(1), 161-182.

Thorne, S.L. (2004). Cultural historical activity theory and the object of innovation. In K. van Esch, & O. St. John (eds.) *New Insights into Foreign Language Learning and Teaching* (pp. 51-71). Frankfurt: Peter Lang.

Van Lier, L. (2002). An ecological-semiotic perspective on language and linguistics. In C. Kramsch (ed.) *Language Acquisition and Language Socialization: Ecological Perspectives* (pp. 140-164). London: Continuum.

Vygotsky, L. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge: Harvard University Press.

Warschauer, M. (Ed.). (1995). *Virtual Connections: Online Activities and Projects for Networking Language Learners*. Honolulu: University of Hawai'I, Second Language Teaching and Curriculum Centre.

Warschauer, M. (2003). *Technology and Social Inclusion: Rethinking the Digital Divide.* Cambridge: The MIT Press.

Warschauer, M. (2004). Technological change and the future of CALL. In S. Fotos & C. Brown (eds.) *New Perspectives on CALL for Second and Foreign Language Classrooms* (pp. 15-25). New Jersey: Lawrence Erlbaum Associates.

Warschauer, M. (2005). Sociocultural perspectives on CALL. In J. Egbert & G. Petrie (eds.) *CALL Research Perspectives* (pp. 41-52). Mahwah: Lawrence Erlbaum Associates.

Yearwood, T. (2004a). Visión y perspectivas sobre el uso del computador en el proceso enseñanza-aprendizaje de idiomas extranjeros en el contexto Trinitario: Hacia una configuración y búsqueda de experiencias relevantes. El concepto CYBER. *Unpublished Masters Thesis*.

Yearwood, T. (2004b). Task-based presentation software in the one-computer foreign language classroom. In Y. Saito-Abbott, R. Donovan & T. Abbott (eds.) *Digital Stream: Emerging Technologies in Teaching Languages and Cultures – Volume 4* (pp. 105-116). San Diego: Larc press.

Yin, R. K. (2003). *Case Study Research Design and Method.* Thousand Oaks: Sage Publications.

List of appendices

Appendix 1a: Pupil interview guide

Interview guide

TY: So the first question I'd like to ask you is: What has been your experience using computers in general? Your own personal experience. Or you could tell me about how you've used them in school – you could talk about that.

TY: Can you tell me anything (more) about about the different types of experiences you've had at school using the computer. Do you have any (more) examples. Have you ever had the opportunity to use computers in any other subjects.

TY: How did you feel about that opportunity/those opportunities that you had.

TY: What advantages or disadvantages can you think of let's say that using the computer in the classroom might have for students? Can you think of any advantages or disadvantages, not just in the classroom, but maybe for later on?

TY: And what about using it in the classroom itself? What about the actual hands-on classroom experiences? What are your views on the advantages or disadvantages of such an experience?

Appendix 1b: Pupil stimulated recall interview guide

Interview guide

We just watched a little of your interaction yesterday? And I refer to that.
Let's talk the idea of roles within the group. Can you tell me if you think the **roles have changed** at all within the group from the last time you had your planning discussion before you actually started working at the computer.

Is it **different from** when you are not working on the computer?

What about _____ (names of other pupils)?

Do you see **the computer playing any role** in affecting the nature of the group? Of how the group is interacting now?

What is the role of the computer? **Is it helping**? **Is it taking away**?

How **comfortable do you feel working at the computer**? Working out your language issues? Was that affected by the fact that you had the computer in front of you?

How did you feel working in the group?

Tell me about how you see the interaction among you now that you are working with the computer. Have you seen any change within the group?

Is that to the advantage of the group?

How would you judge the quality of the language produced based on the skills of the students in the group?

(For pupils who did not actually work on the computer)
How do you feel using the computer? You have (not) actually put your hands on the mouse? Do you feel like you are actually part of preparing the presentation? How involved do you feel?

What do you feel was your role in the group?

What is your input?

What is the focus of the group? Are you more interested in how the presentation looks? What is the entire focus of the group?

What are you mainly concerned with? What do you have in your mind when you are working on the computer?

Appendix 2: Teacher reflection questionnaire

Teacher Reflections

The following is a guide which I can use to help me reflect on my ideas about language teaching and the way I approach it.

1. As a language teacher, my main aim is

_____
_____
_____
_____
_____

2. I would describe my teaching method as

_____
_____
_____
_____
_____

3. One of my main strategies in teaching English is

_____
_____
_____
_____

4. In order to help students develop their writing for example, I

_____
_____
_____
_____
_____

5. In general, I think the best way to learn language is

_____
_____
_____
_____
_____

Name:_____ Date:_____

6. In terms of teaching resources, at our school,_____, we have

_____
_____
_____
_____
_____

7. I usually use

_____
_____
_____
_____
_____
_____,
because

_____
_____
_____
_____
_____
_____

8. With specific reference to using the computer, I have read/heard/seen/used

_____
_____
_____
_____
_____

9. My personal feeling about using the computer in the classroom is

_____
_____
_____
_____
_____
_____

10. Finally, I would like to add that

_____
_____
_____
_____

Name:_____ Date:_____

Appendix 3a: Skills assessment questionnaire – Case Study One

Assessing my skills

Here is a short questionnaire to help me assess some skills I may use in the classroom.

Please indicate your level in the particular skill by placing an **X** in the appropriate box:
1 = very high
2 = high
3 = average
4 = low
5 = very low

		1	2	3	4	5
1.	Speaking English.					
2.	Writing in English.					
3.	Understanding spoken English.					
4.	Understanding written English.					

I am best at:

_____

I am weak at:

_____

		1	2	3	4	5
5.	Coordinating activities in a group.					
6.	Doing research.					
7.	Doing my part in a group activity.					

In a group activity, I am best at:

_____

In a group activity, I am weak at:

_____

		1	2	3	4	5
8.	Using the overhead projector.					
9.	Using the pinboard.					
10.	Making a poster.					
11.	Using the computer.					

Appendix 3b: Skills assessment questionnaire – Case Studies Two and Three

Assessing my skills

Here is a short questionnaire to help me assess some skills I may use in the classroom.

Please indicate your level in the particular skill by placing an **X** in the appropriate box:
1 = very high
2 = high
3 = average
4 = low
5 = very low

		1	2	3	4	5
1.	Speaking French.					
2.	Writing in French.					
3.	Understanding spoken French.					
4.	Understanding written French.					

I am best at:

_____

I am weak at:

_____

		1	2	3	4	5
5.	Coordinating activities in a group.					
6.	Doing research.					
7.	Doing my part in a group activity.					

In a group activity, I am best at:

_____

In a group activity, I am weak at:

_____

—

		1	2	3	4	5
8.	Using the computer in general.					
9.	Using PowerPoint in particular.					

Appendix 4a: Learning preference questionnaire – Pilot Study

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught and how I prefer to learn.

1. Learning English is _____.

2. I enjoy () English class when _____.

3. I do not enjoy () English class when _____.

---

4. Some of the things we talk about in class are: _____

5. My favourite topic is _____.

6. Some of the activities we do in class are: _____

7. My favourite activity is _____.

8. Some of the materials we use in class are: _____

9. My favourite is _____.

---

10. I have/have not used the computer in my English class.

11. I have/have not used the computer to find information for my English class.

12. I have/have not used the computer to type an assignment.

13. I have/do not have a computer at home.

---

14. I prefer/do not prefer to work alone.

15. I prefer/do not prefer to work with a friend.

16. I prefer/do not prefer to work in a group.

Appendix 4b: Learning preference questionnaire – Case Studies One to Three

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning English.

1. Learning English is
_____.

2. I enjoy (👍) English class when
_____.

3. I do not enjoy (👎) English class when
_____.

Please circle the options which apply to your English class and then fill in the blank to indicate your preference.

4. In my English class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify)
_____.

My favourite is _____.

5. In my English class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is _____.

Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.

6. What do you think is the best way to learn English in class?
_____

_____

7. Would you say you have experienced learning English in this way? _____

Thank you for cooperating!
***

Appendix 5: Learner diary

My learner diary

Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?

2. What word would you use to describe today's lesson? Why did you choose this word?

3. Did you feel comfortable working with your classmates today? Why?/Why not?

4. Do you think that the computer was useful in today's lesson? Why?/Why not?

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?

7. In general, how do you think this lesson could have been better?

Name:_____ Date:_____

Appendix 6: Video protocol template

Analysing classroom interaction:
Describing pupils' (collaborative) actions around the computer

Which actions do pupils carry out while working together around the computer?
Which of these actions would you say are indicative of the pupils working together as a unit, i.e. collaboratively?

While looking at the video recordings, please fill in the table below with the following details:

- giving interval times at which you can identify actions in which pupils engage as they work,
- describing the specific action, and
- placing an "X" in the last column to indicate which actions are indicative of collaboration.

Time	Description of action	Actions indicative of pupils collaborating

Thanks a lot for your help!

Appendix 7a: Participant role protocol template (Learning preference questionnaire)

Analysing participant roles:
Describing participant roles based on pupils' perceptions

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.

While reading the statements made by the pupils in their learning preference questionnaire, please fill in the table below with the following details:

- selecting statements
- quoting statements (text) which refer to the role of the pupil, the teacher and the computer,
- and coding these statements by selecting a word of your choice (role definition) to define the respective roles

Role	Text	Role definition
Pupil		
Teacher		
Computer		

Thanks a lot for your help!

Appendix 7b: Participant role protocol template (Learner diary)

Analysing participant roles:
Describing participant roles based on pupils' perceptions

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.

While reading the statements made by the pupils in their learner diaries, please fill in the table below with the following details:

- selecting statements
- quoting statements (text) which refer to the role of the pupil, the teacher and the computer,
- and coding these statements by selecting a word of your choice (role definition) to define the respective roles

Role	Text	Role definition
Pupil		
Teacher		
Computer		

Thanks a lot for your help!

Appendix 7c: Role classification template (Learning preference questionnaire)

Interpreting participant roles:
Interpreting participant roles based on pupils' perceptions

How can participant roles be classified?
Which headings can be used to classify participant roles?

After having described participant roles in the "Describing participant roles" template, please indicate, by filling in the table below, which of the following classification headings you would use to classify each of the role definitions you have identified.

Pupil: **collaborative interaction, other**
Teacher: **change of roles, other**
Computer: **helpful, developing media competence, interesting, developing speaking/presentation skills, supporting collaborative interaction, other.**

In the case of "other", please propose a specific classification heading.

Role	Role definition	Classification
Pupil		
Teacher		
Computer		

Thank you for your help!

Appendix 7d: Role classification template (Learner diary)

Interpreting participant roles:
Interpreting participant roles based on pupils' perceptions

How can participant roles be classified?
Which headings can be used to classify participant roles?

After having described participant roles in the "Describing participant roles" template, please indicate, by filling in the table below, which of the following classification headings you would use to classify each of the role definitions you have identified.

Pupil: **collaborative interaction, other**
Teacher: **change of roles, other**
Computer: **helpful, developing media competence, interesting, developing speaking/presentation skills, supporting collaborative interaction, other.**

In the case of "other", please propose a specific classification heading.

Role	Role definition	Classification
Pupil		
Teacher		
Computer		

Thank you for your help!

Appendix 8: Task description – Pilot Study

Task title: Structuring a text in English – a process writing approach

Task context: In the English Class 9 programme, pupils are expected to begin developing more sophisticated skills in structuring different kinds of texts. A process writing approach to structuring texts, that is, brainstorming, constructing, editing and finalising, can be a very useful way of helping pupils to advance these skills. Software developed with aim of supporting this process can also prove useful. Freestyler is one such tool which developers at the University of Duisburg-Essen have used in projects with schools in the Duisburg area and which the researcher was trained in using.

Task description:

Pupils work in groups to prepare a concept development document to guide their development of the text for an oral presentation, using Freestyler as well as the support of worksheets. Using Freestyler, they develop a mindmap of the structure of their presentation in the in-class phases of preparation. In this way, they could easily share their interim ideas with their classmates at any point.

Task objectives:

During the preparation of the task, pupils will be able to create a mindmap to reflect the development of their text for an oral presentation which they will deliver at the end of the series of "process writing" sessions.

Appendix 9: Task description – Case Study One

Task title: Presenting topics of interest to young people

Task context: The syllabus for the English programme for the 11th class at the grammar school level includes the development of presentation skills. Pupils are also required to demonstrate a moderate level of media competence when delivering oral presentations. It is therefore common to have pupils do an oral presentation in English supported by some form of visual media. In some cases pupils are told explicitly which media to use (as is sometimes the case when teacher requires them to use the computer). Otherwise, pupils can choose whichever medium they feel comfortable using.

Task description:

TASK ONE

Pupils work in groups to prepare a visual support, using any media of their choice, for their oral presentation on one selected area of focus on the text "My son the fanatic".

TASK TWO

Pupils work in groups to prepare a visual support, using any media of their choice, for their oral presentation on the topic of happiness.

Task objectives:

By the end of the task, pupils will be able to create a structured supporting document for their oral presentation, using a form of media of their own choosing.

Appendix 10: Task description – Case Study Two

GROUP ONE

Task title: Answering essay questions

Task context: Pupils are unable to interpret essay questions and often experience great difficulty in formulating the necessary response. The tendency therefore is either to produce irrelevant material or, in some cases, to resort to narration of events in the text rather than explaining how the events support their general point.

Task description:

Pupils will work as a group of four prepare an oral report in French using the support of PowerPoint. The presentation will be based on an analysis and overview of the question below, requiring pupils to

1. identify the main words,
2. say what specifically is being asked in each question,
3. list the main points,
4. select relevant examples from the text (quotations, references to themes, plot, etc.)
5. show a clear connection between the examples and how they help to support the main points identified in #3 above.

Pupils will present the analysis of the question in French (orally) to their classmates.

QUESTION: José ne vit pas une enfance pareille aus autres à Petit Mome. Discutez ce jugement en vous référant à La Rue Casses-Negres.
(José does not have a childhood like the other children in Petit Mome. Discuss this view referring to Black Shack Alley.

Task objectives:

By the end of the task, pupils will be able to:

I. clearly interpret the question,
II. clearly differentiate between the specific point being made and the example being used to support the point, and
III. appreciate the fact that an example cannot stand on its own and be used in place of a point.

[Personal documentation – Case Study One, Teacher One, 22.02.2005].

GROUP TWO

Task title: Answering essay questions

Task context: Pupils do not understand the depth of analysis which is expected when certain key words are used in essay questions in the French literature segment of the Freanch A-Level programme. They therefore do not respond adequately and sometimes even accurately to questions containing these key words. This is because they seemingly have difficulty understanding what the words are asking of them and what type of information is implicit in the questions.

Task description:

Pupils will work as a group of four to prepare an oral report using the support of PowerPoint, in which they

1. define the following key words used in essay questions: Analysez; commentez,
2. say what type of information is needed for each key word, and
3. select a sample question (applying the information identified in #2 above).

Pupils will present the analysis of the question in French (orally) to their classmates.

Task objectives:

By the end of the task, pupils will be able to:

I. define the key words in French literature essay questions, and
II. show a better understanding of how to interpret and respond adequately to questions with key words by providing the relevant information in their answers.

[Personal documentation – Case Study One, Teacher Two, 22.02.2005].

Appendix 11: Task description – Case Study Three

Task title: Introducción a la carta comercial (*Introducing the busines letter*)

Task context: As part of the language practice component of the Business Spanish programme, students in this intermediate group are expected to deliver an oral presentation at the end of the first year of their studies.
In order to give them a chance to present to an "authentic" audience and at the same time reinforce their knowledge of Business Spanish, they will be given the chance to do an introduction to the topic "the business letter" for the beginner Business Spanish group. This oral presentation should be accompanied by visual support in the form of a PowerPoint presentation, to make it easier for the beginners to be able to follow.

Task description:

Preparen una presentación en PowerPoint para el grupo de principiantes para darles una introducción a la construcción de la carta comercial.

Divídanse en tres grupos para tratar los temas:
1. Estructura
2. Expresiones importantes
3. Gramática

Pueden elaborar más los temas si quieren.

La presentación tendrá lugar el día 6 de mayo en la sala 016 a las 15:30.

Prepare a presentation in PowerPoint for the group of beginners to introduce them to the structure of the business letter.

Divide yourselves into three groups to deal with the following topics:
1. *Structure*
2. *Important expressions*
3. *Grammar*

You may work on more than one topic if you wish.

The presentation will be held on 6th May in Room 016 at 3:30 p.m.

Task objectives:

Students will be able to prepare a presentation about the structure, language and grammar of a Spanish business letter in order to demonstrate their ability to select appropriate content and an appropriate structure for their document which will serve as visual support for their oral delivery.

Appendix 12: Sample of Learning preference questionnaires – Pilot Study

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught and how I prefer to learn.

+ 1. Learning English is useful.
2. I enjoy (☺) English class when it's funny and interesting and we use lots of different media
3. I do not enjoy (☹) English class when it's boring and we just have to write too much
+ 4. Some of the things we talk about in class are:
The Hobbit, Ireland, report of classes, tenses etc
5. My favourite topic is The Hobbit.
+ 6. Some of the activities we do in class are:
working in groups (Ireland) and working with the media
7. My favourite activity is working in groups.
+ 8. Some of the materials we use in class are:
The Internet, Books, old reports etc.
9. My favourite is The Internet.
+ 10. I have/have-not used the computer in my English class.
11. I have/have-not used the computer to find information for my English class.
12. I have/have-not used the computer to type an assignment.
13. I have/do not have a computer at home.
+ 14. I prefer/do not prefer to work alone.
15. I prefer/do-not-prefer to work with a friend.
16. I prefer/do-not-prefer to work in a group.

Learning English * but often difficult

Here are my ideas about learning English at school as well as some information about how it is taught and how I prefer to learn.

+ 1. Learning English is fun, because I've some pen friends I write in English*
2. I enjoy (☺) English class when we learn things about other countries.
3. I do not enjoy (☹) English class when have to learn grammar rr.
+ 4. Some of the things we talk about in class are:
other countries, eg. Ireland and Australia, reading books ("The Hobbit") or short-stays in the English-book.
5. My favourite topic is Australia/USA.
+ 6. Some of the activities we do in class are:
working in groups to find out something about Ireland
7. My favourite activity is work in groups.
+ 8. Some of the materials we use in class are:
the internet, special books
9. My favourite is internet.
+ 10. I have/have not used the computer in my English class.
11. I have/have-not used the computer to find information for my English class.
12. I have/have-not used the computer to type an assignment.
13. I have/do-not have a computer at home.
+ 14. I prefer/do not prefer to work alone.
15. I prefer/do-not-prefer to work with a friend.
16. I prefer/do-not-prefer to work in a group.

Name: Date: 08th April 2003 TY/1

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught and how I prefer to learn.

1. Learning English is very important because its used in most jobs.
2. I enjoy (☺) English class when we have a lot of fun.
3. I do not enjoy (☹) English class when the lessons are boring and terrible.

4. Some of the things we talk about in class are:
Grammar, the actual topic

5. My favourite topic is "The Hobbit".

6. Some of the activities we do in class are:
... work in groups, list CD's

7. My favourite activity is work in groups.

8. Some of the materials we use in class are:
Book, Blackboard, CD-Player

9. My favourite is CD-Player.

10. I have/~~have not~~ used the computer in my English class.
11. I have/~~have not~~ used the computer to find information for my English class.
12. I ~~have~~/have not used the computer to type an assignment.
13. I have/~~do not~~ have a computer at home.

14. I prefer/~~do not~~ prefer to work alone.
15. I prefer/~~do not prefer~~ to work with a friend.
16. I prefer/~~do not prefer~~ to work in a group.

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught and how I prefer to learn.

1. Learning English is "interesting, but it's important for work after school
2. I enjoy (☺) English class when it's easy and [redacted] when I'm interested in.
3. I do not enjoy (☹) English class when it's boring and don't understand anything.

4. Some of the things we talk about in class are:
- the book "the Hobbit"
- Ireland
- Australian

5. My favourite topic is Australian.

6. Some of the activities we do in class are:
- read a book
- work in a group

7. My favourite activity is work in a group.

8. Some of the materials we use in class are:
- English book
- Information books
- Girlsbook

9. My favourite is English book.

10. I [redacted]/have not used the computer in my English class.
11. I have/[redacted] used the computer to find information for my English class.
12. I have/[redacted] used the computer to type an assignment.
13. I have/[redacted] a computer at home.

14. I prefer/do ~~not prefer~~ to work alone.
15. I prefer/[redacted] to work with a friend.
16. I prefer/[redacted] to work in a group.

Name: [redacted] Date: 08.04.2003 TY/1

Appendix 13: Sample of process writing worksheets – Pilot Study

Group: _____

Members: _____
_____
_____
_____
_____

Topic chosen: _____

Presentation format (*please circle one*): Essay Chart Summary Other _____

Facts gathered:

_____

_____

_____

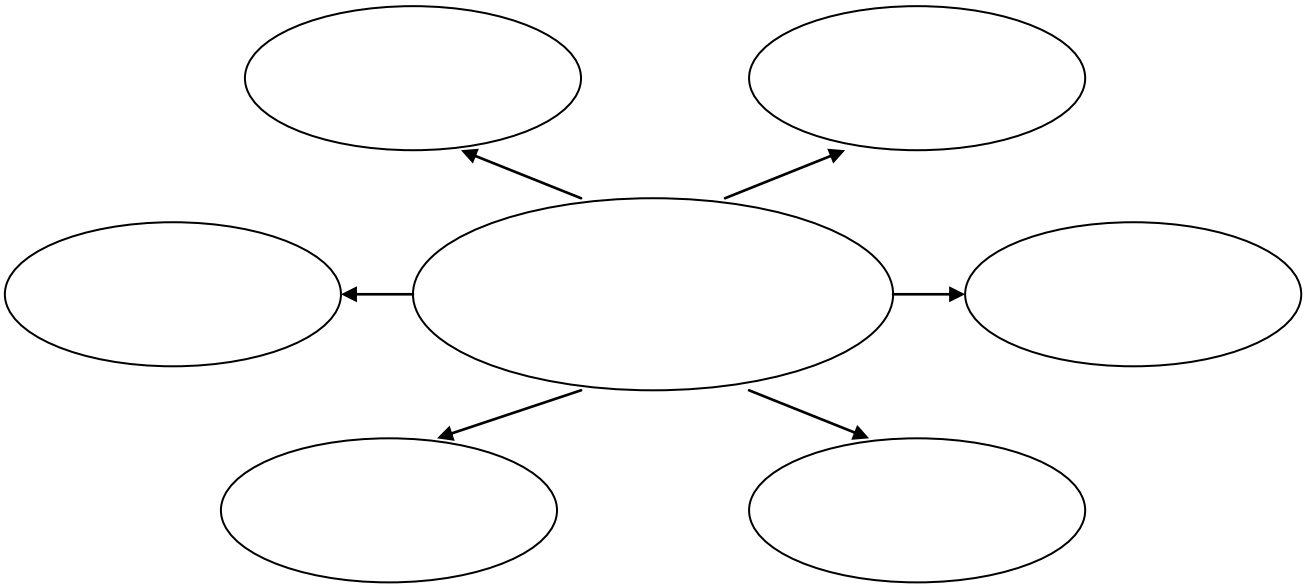
Sources used:

_____

_____

_____

Exploring main and related ideas



Structuring our ideas

Now that we have general ideas for our topic and have practised writing topic sentences, we can begin to think of a possible structure for presenting these ideas. We can start off by reviewing the initial ideas (maybe even combining some), organizing them in logical order and redrafting our topic sentences.

Work in your groups to answer these questions:

Which ideas should we leave out?

_____

Are there any new ideas we can include?

_____

Which ideas can we combine?

_____

We plan to discuss our ideas in the following order:

_____
_____
_____

What do our classmates think?

Group: _____

Comments:

Group: _____

Comments:

Writing the introduction

Using a technique called "Fastwriting", I will develop the overall focus of the presentation.
My aim is to:

1. concentrate on relevant ideas, not on grammar
2. write as quickly as I can without stopping or making corrections
3. avoid leaving blanks, even if it means filling in a word in my native language
   (Adapted from *Process Writing* by Ron White and Valerie Arndt)

Here goes!

_____

_____

_____

_____

_____

- **Reviewing (How can I improve this draft?)**

I can make this start more interesting by

_____

_____

I can improve the structure of this paragraph by

_____

_____

I can make sentence 1,2,3…clearer by

_____

_____

_____

_____

- **Peer review**

_____

_____

Appendix 14: Samples of Learner diaries – Pilot Study

My learner diary

Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?
M Yes, to work with the computer and to write a text and an introduction

2. What word would you use to describe today's lesson? Why did you choose this word?
Interesting because we can work with the computer and with the group very good.

3. Did you feel comfortable working with your classmates today? Why?/Why not?
Yes, because we have worked really hard.

4. Do you think that the computer was useful in today's lesson? Why?/Why not?
Yes, because we have to do a part of our chart on it today.

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?
No

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?
Yes, but not in this lesson.

7. In general, how do you think this lesson could have been better?
I think the lesson was okay!

My learner diary

Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?
F/I Yes, I learnt something about the history from Trinidad und Tobago (Columbus etc.)

2. What word would you use to describe today's lesson? Why did you choose this word?
Knowledge. We know something about Columbus now. Our knowledge is bigger.

3. Did you feel comfortable working with your classmates today? Why?/Why not?
Yes because it's interesting to know what topic the classmates have chosen.

4. Do you think that the computer was useful in today's lesson? Why?/Why not?
Yes. You can show something better as on board

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?
No.

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?
Nein !

7. In general, how do you think this lesson could have been better?
We can work longer in the groups together.

My learner diary

Reflections on lessons conducted during the project: "Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?

M Yeah? Now I know that we can work with the PC and without it's a work needed. only on thing (with or without), we can complete it

2. What word would you use to describe today's lesson? Why did you choose this word?

happy

Because we have much fun in English (only Mi. and Do. :))

3. Did you feel comfortable working with your classmates today? Why?/Why not?

Yeah?

They've done something?

4. Do you think that the computer was useful in today's lesson? Why?/Why not?

Yeah?

See No. 5!

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?

Yeah.

See No. 4

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?

My English is the same bad English as last week?

7. In general, how do you think this lesson could have been better?

U should spoke not so fast?

My learner diary

Reflections on lessons conducted during the project: "Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?

S/T Yes! Learned something new. Today our classmates presented us their topic sentences and there were many new informations in it. Also we learned to ~~use~~ tell our classmates something about our topic in English

2. What word would you use to describe today's lesson? Why did you choose this word?

~~The lesson interesting~~ The lesson was interesting and difficult. It was interesting to ~~come~~ hear something about the topics the other have chosen, but it was difficult to present our topic ourselves to them.

3. Did you feel comfortable working with your classmates today? Why?/Why not?

Yes because we helped each other with the computer.

4. Do you think that the computer was useful in today's lesson? Why?/Why not?

Yes. We could show the others our topic better than without it.

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?

Yes. It is better to show it you can show all classmates your topic on the PC, because you can remember it better.

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?

Yes, because if you have to speak in English all the time during the lesson your English will is getting better.

7. In general, how do you think this lesson could have been better?

I don't know.

Name: [illegible] Date: 20.06.03 TY/1

Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?

I think No. We heard the other presentations. So I wouldn't say that I learnt anything new.

2. What word would you use to describe today's lesson? Why did you choose this word?

OK. It was not directly boring, but not cool. A normal school lesson.

3. Did you feel comfortable working with your classmates today? Why?/Why not?

Yes, I have almost with everybody in my class a good relationship.

4. Do you think that the computer was useful in today's lesson? Why?/Why not?

Today it was good to have a computer, because it was easier to show something they viewer maked more interesting.

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?

Yes, maybe how to make a presentation more intersting.

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?

I think yes, because we are ~~talking~~ speaking more English

7. In general, how do you think this lesson could have been better?

It could be better to do something new.

My learner diary

Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

F/I

1. Did you learn anything new today? If so, what specifically?

yes, because we found new information about the history of carnival.

2. What word would you use to describe today's lesson? Why did you choose this word?

Informativ, because the other groups showed us what they have and we found new informations.

3. Did you feel comfortable working with your classmates today? Why?/Why not?

yes, because everybody helped to find new information.

4. Do you think that the computer was useful in today's lesson? Why?/Why not?

yes, because the other groups presented us their work with it.

5. Do you think that you are learning to use the computer in a new way? If yes, in what specific way?

No.

6. Do you think that your language skills (eg. writing, grammar) are improving? If yes, in what specific way?

No.

7. In general, how do you think this lesson could have been better?

I don't think that it could have been better.

Name: [redacted] Date: 26.06.03 TY/1

Appendix 15: Samples of Learning preference questionnaires – Case Study One

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you thing about learning English.

1. Learning English is interesting, and fun but also sometimes boring.
2. I enjoy (☺) English class when the teacher isn't too strict
3. I do not enjoy (☹) English class when I have to do a lot of homework

Please circle the options which apply to your English class and then fill in the blank to indicate your preference.

4. In my English class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) _____

My favourite is dvd.

5. In my English class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class

My favourite is in small groups.

Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.

6. What do you think is the best way to learn English in class?

I think the best way to learn English is to speak a lot. If you keep on speaking it is easier to remember words and it is also helpful to write good and long texts. And it has to be fun, with games and projects that you can learn and find out about the things on your own without the teacher's rule.

7. Would you say you have experienced learning English in this way? Yes

Thank you for cooperating!

***

Name: ____ Date: 30.03.2004 TY/I

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you thing about learning English.

1. Learning English is very difficult
2. I enjoy (☺) English class when I was in grade 10 and now (11)
3. I do not enjoy (☹) English class when I was in grade 5

Please circle the options which apply to your English class and then fill in the blank to indicate your preference.

4. In my English class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) _____

My favourite is to see dvd or video.

5. In my English class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class

My favourite is to work in small groups.

Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.

6. What do you think is the best way to learn English in class?

I think the best way is to work in groups because you can ask the other students in your groups and communicate with them and so it is really easy to learn English

7. Would you say you have experienced learning English in this way? Yes

Thank you for cooperating!

***

Name: ____ Date: 30.03.'04 TY/I

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you thing about learning English.

1. Learning English is very important and useful for everyone's life.
2. I enjoy (☺) English class when we deal with topics, which I'm interested
3. I do not enjoy (☹) English class when we discuss the whole lesson.

Please circle the options which apply to your English class and then fill in the blank to indicate your preference.

4. In my English class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) _____.

My favourite is novel.

5. In my English class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is in small groups.

Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.

6. What do you think is the best way to learn English in class?

- work in groups
- outside experiences
- projects

7. Would you say you have experienced learning English in this way? Not always

Thank you for cooperating!
***

Name: [redacted] Date: 30.3.2004 TY/1

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you thing about learning English.

1. Learning English is important to communicate with other people al
2. I enjoy (☺) English class when we work in groups and speak ~~[illegible]~~ a lot
3. I do not enjoy (☹) English class when we have to write texts or write to the blackboard

Please circle the options which apply to your English class and then fill in the blank to indicate your preference.

4. In my English class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) _____.

My favourite is video.

5. In my English class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is small groups.

Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.

6. What do you think is the best way to learn English in class?

- speaking ~~[illegible]~~ English the whole time
communicate with the students
speak about topics, the students like

7. Would you say you have experienced learning English in this way? yes

Thank you for cooperating!
***

Name: [redacted] Date: 30.3.'04 TY/1

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

+ *Please complete the following statements to say what you thing about learning English.*

1. Learning English is one of my favorite work in school.
2. I enjoy (☺) English class when we discuss a lot and can do projects.
3. I do not enjoy (☹) English class when only the teacher is talking about boring stuff.

+ *Please circle the options which apply to your English class and then fill in the blank to indicate your preference.*

4. In my English class we use/have used (novels) (everyday texts) (overhead projector) (video), dvd, computer, (tape recorder) other (please specify) _____.

My favourite is novels.

5. In my English class we work/have (worked individually) (in pairs) (in small groups) in larger groups, (as a whole class).

My favourite is in small groups.

+ *Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.*

6. What do you think is the best way to learn English in class?
The best way is to discuss a lot in class. Not only about everyday situations, also about e.g. American history. With different parts of English work everyone could get interested in this language somehow. Also doing projects with user people are useful, to train your English in your free time.
7. Would you say you have experienced learning English in this way? Very much (mostly in connection with English history)

Thank you for cooperating!
***

Name: _____ Date: 30.03.04 TY/1

Learning English

Here are my ideas about learning English at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

+ *Please complete the following statements to say what you thing about learning English.*

1. Learning English is sometimes boring, sometimes interesting.
2. I enjoy (☺) English class when we do projects, watch a film etc.
3. I do not enjoy (☹) English class when we discuss a lot of things and can't work in groups.

+ *Please circle the options which apply to your English class and then fill in the blank to indicate your preference.*

4. In my English class we use/have used (novels) (everyday texts) (overhead projector) (video), dvd, computer, tape recorder, other (please specify) _____.

My favourite is video.

5. In my English class we work/have worked (individually), (in pairs), (in small groups), (in larger groups), (as a whole class).

My favourite is in small groups.

+ *Please answer the following questions to say what you think is the best way to learn English and how it compares with your experience.*

6. What do you think is the best way to learn English in class?
I don't really know what the best way to learn English is, but projects and working in groups are very helpful. This are also things that I like.
7. Would you say you have experienced learning English in this way? Yes, maybe.

Thank you for cooperating!
***

Name: _____ Date: 30.03.04 TY/1

Appendix 16: Corroborative analysis of critical friend (1) – Case Study One
(Role definitions – Learning preference questionnaires)

Analysing participant roles:
Describing participant roles based on pupils' perceptions

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.

While reading the statements made by the pupils in their learning preference questionnaire, please fill in the table below with the following details:

- selecting statements
- quoting statements (text) which refer to the role of the pupil, the teacher and the computer,
- and coding these statements by selecting a word of your choice (role definition) to define the respective roles

Role	Text	Role Definition.
Pupil	**Q1.Learning English is** ……	**Interesting. Ineffective.**
	"Interesting and fun but also sometimes boring"	**Helpful.**
	"Important for your life to get a good job "	**Helpful.**
	"For me sometimes hard but important for the future"	**Helpful.**
	"Sometimes difficult but important for life ".	**Interesting.**
	"Interesting"	**Helpful.**
	"Very useful and fun"	**Helpful.**
	"Important but boring "	**Helpful.**
	"Very important and useful for everyone's life".	**Helpful.**
	"Important"	**Interesting.**
	"Often Fun but sometimes it's boring "	**Helpful.**
	"good for life "	**Interesting.**
	"One of my favorite work in school "	**Helpful.**
	"Important for my life"	**Helpful.**
	"Sometimes boring sometime interesting"	**Developing speaking skills.**
	"Important to communicate with other people all over the world "	**Helpful.**
	"sometimes exciting ,sometimes boring but every time important"	**Helpful.**
	"Important in the future "	**Difficult.**
	"Very Difficult"	**Collaborative interaction.**
	Q2.I enjoy class..	
	"We work in groups or pairs"	**Developing media competence.**

"When we watch movies and talk about everyday themes"	**Interesting.**
"We do interesting projects".	**Interesting.**
"It's funny and we don't work too close on a text or something else"	**Developing media competence.**
"Watching movies"	**Collaborative interaction.**
"We could work in groups"	**Interesting.**
"We deal with topics which am interested in"	**Interesting.**
"We talk about interesting Things "	**Developing speaking skills.**
"We are talking most of the time "	**developing media competence**
" We watch movies"	**Developing speaking skills.**
" We discuss a lot and can do projects "	**Supporting collaborative**
"Discuss things and can say our own opinion "	**interaction.**
	Developing media competence.
"We do projects watch a film e.t.c"	**Developing speaking skills.**
"We work in groups and speak a lot "	**Interesting.**
"The atmosphere is well and I like the topic"	**Collaborative interaction.**
"We have discussions"	**Developing media competence.**
"I can watch a film "	
Q4.In my English class we use/have used novels ,everyday texts overhead projector video dvd computer tape recorder other please specify	
My Favourite ist…	**Developing media competence.**
"Dvd"	**Developing media competence.**
"Tape recorder "	**Developing media competence.**
"Video"	**Developing media competence**
"Overhead Projector "	**Developing media competence.**
"Novels "	**Developing media competence**
"Video and Tape Recorder "	**Developing media competence.**
"DVD"	**Developing media competence.**
"Novel".	**Developing Media competence**
"Novel"(but not the novel we've read)	**Developing Media competence.**
"Video"	**Developing media competence.**
Novels, Dvd".	**Developing media competence.**
"Video and overhead P."	**Developing media competence.**
"Working in pairs small groups and then in class "	**Developing media competence.**
"Video"	**Developing media competence.**
"Video"	**Developing media competence.**
"Dvd"	**Developing media competence.**
"To see a dvd or a video "	**Developing media competence.**
Q5.In my English class we work/have worked individually ,in pairs in small groups in larger groups as a whole class.	**Supporting collaborative**
My Favourite is	**interaction.**
"In small groups "	
"In small groups"	**Supporting collaborative interaction.**
"To work in pairs "	**Supporting collaborative Interaction.**
"In small groups "	**Supporting collaborative inter Supporting collaborative interaction.**
"In pairs or in small groups"	

	Supporting collaborative
"In small groups "	**interaction.**
"In small groups"	**Supporting Collaborative**
"In small groups"	**Interaction.**
"In small groups"	**Supporting collaborative**
"To work in small groups "	**interaction.**
In small groups"	**Supporting collaborative**
"In small groups"	**interaction.**
	Supporting collaborative
"Working in pairs small groups and then in class "	**interaction.**
"Individually and sometimes in pairs"	
	Supporting collaborative
"In small groups"	**interaction.**
	Supporting collaborative
"In small groups"	**interaction.**
	Supporting collaborative
"In pairs"	**interaction.**
	Supporting collaborative
"In small groups"	**interaction.**
Q6.What do you think is the best way to learn English	**Developing Speaking skills.**
"I think the best way to learn English is to speak a lot if you keep on speaking it is easier it is easier to remember words and it also helpful to write good and long texts And it has to be fun with games and projects that you can learn and find out about the things on your own without the teachers help"	**Developing Speaking skills.**
"The best way to learn English is to talk much and correct mistakes .A good way is to talk about new vocabularies "	**Interesting.**
"1.To Talk about themes which interest us."	**Interesting.**
"Actual Themes and conflicts "	**Developing Speaking skills.**
"To have discussions so that you talk a lot and find out your mistakes"	**Interesting.**
"I think the best way to learn English is when it's funny for the pupils and they enjoy it"	**Developing Speaking skills.**
"Pleasant Atmosphere listening to ppl who are British, American, English every day. Talking in English urself and only having the teacher talk in English.	**Developing Speaking skills.**
"I think the best is to discuss about a theme and to answer questions and say our own opinion on the class .Also it is good to write texts and it is good if the Teacher write something down"	**Supporting collaborative**
"work in groups "	**interaction.**
	Supporting collaborative
"Outside Experiences"	**interaction.**
"Projects"	
	Supporting collaborative
"When the class can decide wich subjects we will talk about and then we can work in groups "	**interaction.** **Developing Speaking skills.**

	"I think the best way to learn English is to speak a lot of the time and only write down the main facts of the lesson , I think that way you learn the most for example how to say things and so on "	**Developing Speaking skills.**
	"To talk and discuss much in english "	
	"Is to discuss a lot in class not only about everyday situations ,also about e.g Americans History .With different parts of English work everyone could get interested in this language somehow .Also doing projects with aser people is useful ,to train your english in your free time "	**Developing Speaking skills.**
	" you have to speak a lot to get to know a lot of vocabulary of course the (daily ones)too it's important to understand daily situation than be able to discuss about pregnancy or something else"	**Supporting collaborative interaction.**
	" I don't really know what the best way to learn English is but projects and working in groups are very helpful .This are also things that I like "	**Developing Speaking skills.**
	"Speaking English the whole time "	**Supporting collaborative interaction.**
	"Communicate with students "	**Interesting.**
	"Speak about topics that students like "	**Supporting collaborative interaction.**
	"When you have fun and like the pupils in your class you have to be motivated and like the topics "	**Developing Speaking Skills.**
	"Speaking, hearing, Writing."	**Developing Media Competence.**
	"Watching movies and later talking about what has happened"	
	"I Think the best way is to work in groups ,because you can ask the other students in your group and communicate with then so it's really easy to learn English "	**Supporting collaborative interaction.** **Developing Speaking Skills**
Teacher	**Q2.I enjoy class..**	
	"When the teacher isn't too strikt".	**Interesting.**
	Q3.I do not enjoy class when….	
	"When there is a strict atmosphere and nobody is participating"	**Ineffective.**
	"The lessons aren't organisated or prepared"	**Change of Roles.**
	Q7. Would you say you have experienced learning English in this way.	
	"Sometimes yes sometimes it depends on the **Teacher** "	**Change of roles.**
	"Only the Teacher is talking about boring stuff "	**Ineffective.**
	Q6.What do you think is the best way to learn English	
	"Pleasant Atmosphere listening to ppl who are British, American, English every day. Talking in English urself and only having the **Teacher talk in English.**	**Interesting. Change of roles.**
	"I think the best is to discuss about a theme and to answer questions and say our own opinion on the class .Also it is good to write texts and it is good if	

	the Teacher write something down"	**Change of Roles.**
Computer	**<u>Q4.In my English class we use/have used novels ,everyday texts overhead projector video dvd computer tape recorder other please specify My Favourite ist…</u>**	
	"Posters and the Internet at home to make homeworks.	**Developing Media Competence.**

Appendix 17: Corroborative analysis of critical friend (2) – Case Study One (Identifying collaborative actions)

Analysing classroom interaction:
Describing pupils' (collaborative) actions around the computer

Which actions do pupils carry out while working together around the computer?
Which of these actions would you say are indicative of the pupils working together as a unit, i.e. collboratively?

While looking at the video recordings, please fill in the table below with the following details:

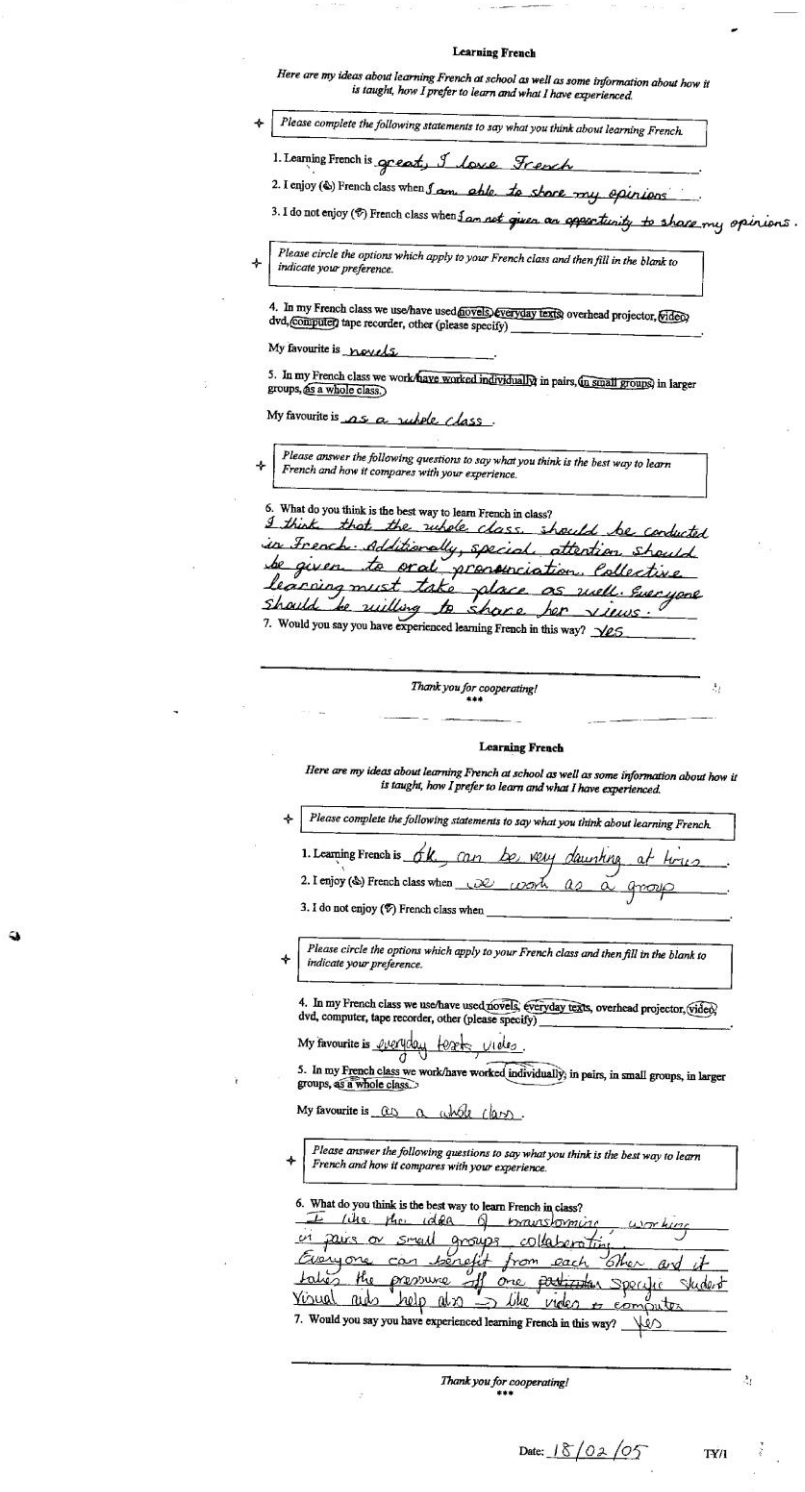
- giving interval times at which you can identify actions in which pupils engage as they work,
- describing the specific action, and
- placing an "X" in the last column to indicate which actions are indicative of collaboration.

Time	Description of action	Actions indicative of pupils collaborating
00:00	S1 S2 S3 all lean forward looking at the c.	**X**
00:07	S1 looks at S2 and says something to her (interacting).	**X**
00:20	S1 still looking at c. and giggles with her hands moving the mouse of the c.	**X**
00:40	S2 now leans also toward the computer and touches the pad scrolling up and down while S1 still has her hand on the mouse,S1 is talking to both of them.	
00:46	S1 now begins to type on the computer.	
01:05	S1 is talking to S2 and she nods her head and then S1 continues with the writing.	**X**
01:17	S2 is pointing to the c. and S1 nods her head. S1 says something to S2 and they all look back to the c.	**X**
01:30	S2 points at c. while saying something. S1 stops and looks at her.	**X**
01:48	S1 asks S2 a question and continues typing on the c.	**X**
01:58	S1 is talking facing S2 and S3 pointing at the book on the table.	**X**
02:01	After a moment of them all silently looking at the c. S1 talks to both S2 and S3 pointing at the book.	**X**
02:08	S3 seems to nod in disagreement and pulls out her book like she is looking something up.	**X**
02:55	S3 reads aloud from her book while S1 and S2 are listening and then S1 types on c. again	**X**
03:11	S1 seems to be asking S3 a question and she nods her head.	**X**
03:17	S3 says something looking at her book and S1 seems to be typing it up.	
03:37	S2 seems to say something facing the c. and they all seem	**X**

	to be interacting while S1 is typing and listening. S3 reads	
03:50	aloud from her book.	
	S3 seems to be dictating whatever S1 is typing on the c.	
04:02	S1 faces S3 and seems to be asking a question and S3 nods her head in agreement.	**X**
04:23	After they all looked into the book S3 says something to S1 and she types on the c.	
04:51	S1 looks at S3 and asks "Is it okay?"	**X**
04:54	S1 is looking at S3 inquisitively and she shakes her shoulder in response saying something like "maybe it…"	**X**
04:58	S3 is talking facing both of them she says" his father was like a brother to him" and S2 twists her mouth in response	**X**
05:11	while S1 is still typing.	
	S1 looks at S3 and says something and she nods her head.	**X**
05:33		
	S3 is reading out loud while S1 seems to be typing it down.	
05:50	S1 seems to be suggesting something looking at both S2 and S3,S2 is observing on the c. What S1 is writing?	**X**
05:54	S3 is saying something rather dictating and S1 is typing on the c.	
06:02	S1 seems to say something looking at the book S2 points to the c. while they all look at it	**X**
06:59	S1 now seems to say something (suggest) while looking at S2 and S3.	**X**
07:17	S3 says something and S2 nods in agreement while S1 picks up to talk again.	**X**
07:42	S1 seems to be saying something S3 nods and leans forward pointing to the computer while S2 also leans forward towards the c.	**X**
07:49	S3 Says "perhaps another color"S1 says of the design.	**X**
08:01	S1 says something and then S3 leans forward towards the c.	

Thanks a lot for your help!

Appendix 18: Samples of Learning preference questionnaires – Case Study Two



Learning French

Here are my ideas about learning French at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning French.

1. Learning French is great, I love French.
2. I enjoy (☺) French class when I am able to share my opinions.
3. I do not enjoy (☹) French class when I am not given an opportunity to share my opinions.

Please circle the options which apply to your French class and then fill in the blank to indicate your preference.

4. In my French class we use/have used (novels) (everyday texts) overhead projector, (video) dvd, (computer) tape recorder, other (please specify) _____.

My favourite is novels.

5. In my French class we work/have worked (individually) (in pairs) (in small groups) in larger groups, (as a whole class).

My favourite is as a whole class.

Please answer the following questions to say what you think is the best way to learn French and how it compares with your experience.

6. What do you think is the best way to learn French in class?
I think that the whole class should be conducted in French. Additionally, special attention should be given to oral pronunciation. Collective learning must take place as well. Everyone should be willing to share her views.
7. Would you say you have experienced learning French in this way? Yes

Thank you for cooperating!
***

Learning French

Here are my ideas about learning French at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning French.

1. Learning French is OK, can be very daunting at times.
2. I enjoy (☺) French class when we work as a group.
3. I do not enjoy (☹) French class when _____.

Please circle the options which apply to your French class and then fill in the blank to indicate your preference.

4. In my French class we use/have used (novels) (everyday texts) overhead projector, (video) dvd, computer, tape recorder, other (please specify) _____.

My favourite is everyday texts, video.

5. In my French class we work/have worked (individually) in pairs, in small groups, in larger groups, (as a whole class).

My favourite is as a whole class.

Please answer the following questions to say what you think is the best way to learn French and how it compares with your experience.

6. What do you think is the best way to learn French in class?
I like the idea of brainstorming, working in pairs or small groups collaborating. Everyone can benefit from each other and it takes the pressure off one person. Specific student visual aids help also → like video or computer.
7. Would you say you have experienced learning French in this way? Yes

Thank you for cooperating!
***

Date: 18/02/05 TY/1

Learning French

Here are my ideas about learning French at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning French.

1. Learning French is difficult but interesting.
2. I enjoy (☺) French class when I understand what is going on and can contribute my opinions.
3. I do not enjoy (☹) French class when I am lost and cannot contribute.

Please circle the options which apply to your French class and then fill in the blank to indicate your preference.

4. In my French class we use/have used (novels) (everyday texts) overhead projector, video, dvd, computer, tape recorder, other (please specify) _____.

My favourite is everyday texts.

5. In my French class we work/have worked (individually), (in pairs), (in small groups), in larger groups, as a whole class.

My favourite is in small groups.

Please answer the following questions to say what you think is the best way to learn French and how it compares with your experience.

6. What do you think is the best way to learn French in class?
The best way to learn French in class is to have vocabulary prepared so that you can speak from the top of your head and not have to go to a dictionary to often. Also, there should be some kind of visual display (computer) to make it fun.

7. Would you say you have experienced learning French in this way? Not really.

Thank you for cooperating!
***

Learning French

Here are my ideas about learning French at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning French.

1. Learning French is a challenge but also interesting.
2. I enjoy (☺) French class when I able to contribute efficiently to the class.
3. I do not enjoy (☹) French class when I am at a loss as to what is going on.

Please circle the options which apply to your French class and then fill in the blank to indicate your preference.

4. In my French class we use/have used (novels) (everyday texts) overhead projector, video, dvd, computer, tape recorder, other (please specify) radio.

My favourite is everyday texts.

5. In my French class we work/have worked (individually), in pairs, (in small groups), in larger groups, as a whole class.

My favourite is in small groups.

Please answer the following questions to say what you think is the best way to learn French and how it compares with your experience.

6. What do you think is the best way to learn French in class?
The best way to learn French in class is to be given time to prepare work ahead of class, to have general important keys and skills being taught by the teacher and also to have students being called upon to answer questions as opposed to questions being asked generally.

7. Would you say you have experienced learning French in this way? To an extent

Thank you for cooperating!
***

Date: 23.02.05 TY/1

Learning French

Here are my ideas about learning French at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning French.

1. Learning French is sometimes interesting.
2. I enjoy (☺) French class when the teacher explains everything we need to know in English and gives us key words in French
3. I do not enjoy (☹) French class when the whole class is in French.

Please circle the options which apply to your French class and then fill in the blank to indicate your preference.

4. In my French class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) radio.

My favourite is everyday texts.

5. In my French class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is in small groups

Please answer the following questions to say what you think is the best way to learn French and how it compares with your experience.

6. What do you think is the best way to learn French in class?
The best way to learn French in class is when the teacher explains the work in English first gives us some vocabulary for example adjectives to describe a character in French.

7. Would you say you have experienced learning French in this way? Most quite

Thank you for cooperating!
***

Learning French

Here are my ideas about learning French at school as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning French.

1. Learning French is a joyful thing for me.
2. I enjoy (☺) French class when the teacher assists in explanations of the book.
3. I do not enjoy (☹) French class when the students have to analyze everything themselves.

Please circle the options which apply to your French class and then fill in the blank to indicate your preference.

4. In my French class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) —.

My favourite is —.

5. In my French class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is individually.

Please answer the following questions to say what you think is the best way to learn French and how it compares with your experience.

6. What do you think is the best way to learn French in class?
I think the best way to learn French in class is through the use of a computer because it would make the class more interactive and fun.

7. Would you say you have experienced learning French in this way? No.

Thank you for cooperating!
***

Date: 10/03/05 TY/1

Appendix 19: Corroborative analysis of critical friend (1) – Case Study Two (Role definitions and classifications – Learning preference questionnaires)

Analysing participant roles:
Describing participant roles based on pupils' perceptions

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.

While reading the statements made by the pupils in their learning preference questionnaire, please fill in the table below with the following details:

- selecting statements
- quoting statements (text) which refer to the role of the pupil, the teacher and the computer,
- and coding these statements by selecting a word of your choice (role definition) to define the respective roles

Role	Text	Role definition
Pupil	"is just another language that I need to learn since I want to be multi-lingual"	Multi-lingual, Individually
	"I am able to contribute efficiently to the class"	Positive contributions, Small groups
	"share my opinions" "collective learning should take place as well. Everyone should be willing to share their views"	Share opinions, Equality, As a whole class
	"I like the idea of brainstorming, working in pairs or small groups, collaborating. Everyone can benefit from each other and it takes the pressure off specific students".	Collaboration, Contributions, as a whole class
Teacher	"to have general important keys and skills being taught by the teachers"	Teaching skills
	"when the teacher explains the work in English but gives us some vocabulary for example adjectives to describe a character in French"	multilingual, Small groups
	"maybe the teacher can set aside some time for speaking"	Should promote an integrated skills approach, Individually
	"the teacher assists in the explanations of the	Assistant, there for the pupils,

	book” “my teacher works on my problems, individually”	Individually Individually Expectation of individual help
Computer	“There should be some kind of visual display (computer) to make it fun” “using videos, computer” “by using more visuals (dvds, videos, computers” “I think the best way to learn French in class is through the use of a computer because it would make the class more interactive and fun” “visual aids help also, like video and computer”	Motivational, Small groups Positive Motivational As a whole class Interactive Fun motivational

Interpreting participant roles:
Interpreting participant roles based on pupils' perceptions

How can participant roles be classified?
Which headings can be used to classify participant roles?

After having described participant roles in the "Describing participant roles" template, please indicate, by filling in the table below, which of the following classification headings you would use to classify each of the role definitions you have identified.

Pupil: **collaborative interaction, other**
Teacher: **change of roles, other**
Computer: **helpful, developing media competence, interesting, developing speaking/presentation skills, supporting collaborative interaction, other.**

In the case of "other", please propose a specific classification heading.

Role	Code word	Classification
Pupil	Positive contributions Share opinions, Equality Collaboration, Contributions Multi-lingual	Collaborative interaction Personal skills (other)
Teacher	Teaching skills Bilingual, Should promote an integrated skills approach, Assistant, there for the pupils, Expectation of individual help	Teacher role/teacher personality (other)
Computer	Motivational Motivational Motivational Positive Interactive Fun	Helpful Supporting collaborative interaction Interesting

Appendix 20: Corroborative analysis of critical friend (2) – Case Study Two (Identifying collaborative actions)

Analysing classroom interaction:
Describing pupils' (collaborative) actions around the computer

Which actions do pupils carry out while working together around the computer?
Which of these actions would you say are indicative of the pupils working together as a unit, i.e. collaboratively?

While looking at the video recordings, please fill in the table below with the following details:

- giving interval times at which you can identify actions in which pupils engage as they work,
- describing the specific action, and
- placing an "X" in the last column to indicate which actions are indicative of collaboration.

Time	Description of action	Actions indicative of pupils collaborating
39:10	Students smile and laugh around computer. S4 has her hand on the mouse.	
39:24	S4 says "ok guys!" still with her hand on the mouse	
39:34	S2 says something to the others. S4 takes her hand off the mouse and S2 leans in, looking at the screen quizzically.	**X**
39:40	S4 says "ok" again, taking the mouse again, and S3 writes something on a piece of paper.	
39:50	S2 says something, and S1 nods S3 and S4 ask researcher something for clarification	**X**
39:57	S4 and S2 talk to each other. S1 seems to find this funny. S3 says something.	**X**
40:13	S3 and S2 discuss something. S2 makes an "I don't know" arm movement.	**X**
40:16	S1 contributes to the conversation and S2 and S3 look at her, while S4 looks at the computer screen.	**X**
40:23	S4 asks something, beginning with "do you think?" and S1 looks through her pieces of paper.	**X**
40:28	S1 gives S4 a piece of paper, and all students look at it, interested.	**X**
40:35	S2 and S3 read something from the paper. S4 discusses with them. S3 seems to think about the meaning of something, or how to say something.	**X** **X**
40:50	S2 seems to realize how to do/say something and seems happy about it. S3 laughs.	
40:53	S4 takes the mouse, clarifies what she is going to type, and types. S2 seems to dictate, or spell words out to S4 as she types.	**X**

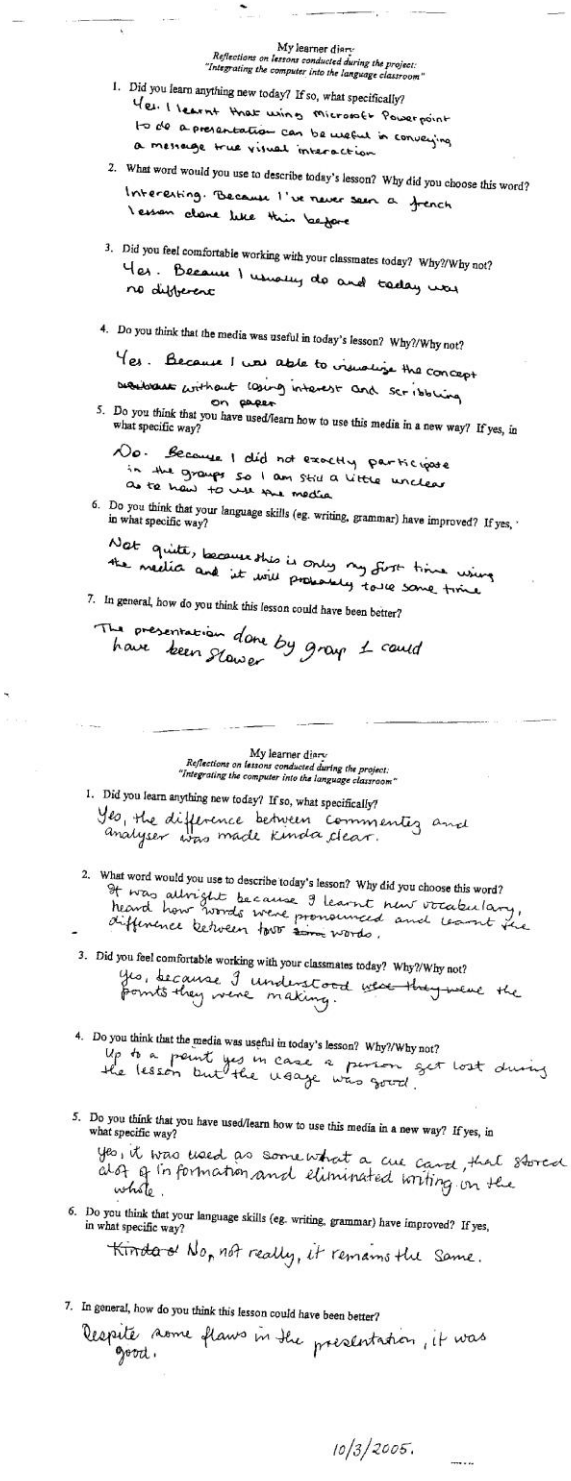
41:46	S4 stops typing and asks a question, to clarify where to put something.	**X** **X**
41:53	S3 nods in agreement	**X**
41:55	S3 seems to ask S1 for confirmation	**X**
41:58	S4 takes the mouse again, points towards the screen and begins typing	
42:08	S2 leans forward to look at the screen	
42:22	S4 says something to the other students, once again checking for their opinion.	**X**
42:29	S4 starts typing again	
42:59	S2 turns to S1 and says something to her. S1 nods.	**X**
43:08	S4 seems to have an idea and types again	
43:16	She moves the mouse	
43:22	S4 looks at the others and they all laugh.	
43:31	S2 says something to S4 and they both laugh. S1 laughs too and points at the screen, saying something	**X**
43:45	S1 and S2 say something whilst S4 types something. S3 smiles	
43:53	S4 moves the mouse around and says something, seeming to ask a question	
44:14	S2 leans in to the screen, looking at it quizzically, saying something.	
44:22	S2 points at the screen forcefully, S1 shakes her head. S2 and S1 seem to discuss something. S3 adds something. S4 meanwhile still has her hand on the mouse	**X** **X**
44:44	S2 once again says something, quizzically. S3 smiles	
44:51	All 4 students lean forwards towards the computer. S4 says something and all the other students laugh. S2 says something, scrutinizing the screen, and S1 says something. S2 points at the screen, saying something. S2 says something else, and S4 shakes her head. S2 says something again "can you see anything there?"	**X** **X** **X** **X**
45:27	S3 says something, as does S2.	
45:36	S4 leans towards the computer, with her hand still on the mouse.	
45:44	S4 says something in response to researcher	
45:57	All students are looking at the screen, and S2 points at it.	
45:27	S3 and S2 say something simultaneously, smiling.	
46:06	All students laugh heartily again together	
46:20	S2 says something and S4 leans in to type	**X**
46:30	S2 says something and S4 types something. Then all students look at the screen and S4 puts her hand on the mouse again.	**X** **X**
46:36	All students lean towards the screen again and S3 points at the screen with a pencil, saying something.	**X**
46:43	S4 types something	**X**
46:49	S3 says something and S1 points at the screen. S4 looks at her and S2 leans in towards the screen. S4 moves the mouse and asks S1 a question. S1 replies "yeah".	**X** **X** **X**
47:01	S2 points to the screen and seems to be giving	**X**

	instructions: "go…and press… to S4 as to what she	**X**
47:01	should do with the computer.	**X**
47:08	All students lean in towards the computer and S4 types something.	**X**
47:13	S2 says something, as does S1, gesturing towards the computer.	**X**
47:20	S2 says something, S4 types, S1 nods.	**X**
47:25	S4 puts her hand back on the mouse, and all of the students sit back.	
47:39	S4 takes her hand off the mouse, then puts it back, moving the mouse back and forth and saying something.	
47:49	S2 says something	
47:55	S4 seems to ask the researcher something and S1 turns to look at researcher.	
48:03	S3 gestures towards the screen with her pencil, saying something, S2 leans in towards the screen and says	
48:03	something too.	**X**
48:10	S2 turns to the researcher to ask something and S4 has her hand on the mouse	
48:18	S3 takes up her papers and shows them to S2	**X**
48:28	S2 says something, as does S3. S4 says something in response, looking to the researcher for confirmation,	
48:18	S2 says "uhuh" in agreement.	
48:45	S4 takes her hand off the mouse, saying "Ok", then puts her hand back on the mouse	
48:47	S3 has a pencil and papers in her hand and seems poised to write. S4 takes her hand off the mouse and says	
	something to the others, seeming to explain what the	**X**
	computer presentation should look like. Meanwhile, S3 looks through her papers.	**X**
49:28	S1 also has papers and flips through them.	
49:41	S1 seems to explain something, gesturing with her hands	**X**
50:00	S4 responds to the suggestions made by S1. S3 and	**X**
	S1 nod in agreement.	**X**
50:15	S4 carries on explaining. S3 and S1 reply.	**X**
50:39	S4 points at S3's papers with her pen and carries on explaining. S2 says something	**X**
51:01	S4 seems to be looking for something on the computer screen and S3 points at the screen with her pencil.	**X** **X**
51:06	S4 moves the mouse around again	
51:17	S4 takes her hand off the mouse and all of the students look at the papers in S3's hands	**X**
51:20	S4 begins to type again.	
51:26	S3 says something and S4 puts her hand on the mouse again.	
51:40	S3 says something and S2 nods. S4 continues moving the mouse.	

51:50	S4 starts typing again.	
51:54	S3 takes out her writing pad from underneath the papers and puts it on the desk, as a mouse-mat, and passes it over to S4. Meanwhile, S4 types.	
52:01	S2, S3 and S2 laugh	
52:06	S3 looks at her papers and says something in French	
52:11	S4 starts typing. S2 says something. S4 puts her hand back on the mouse	**X**
52:43	All students look at the screen	**X**
52:53	S3 says something	
52:58	S4 starts typing again	
53:17	The other students seem to dictate something to S4, who is still typing	**X**
53:27	S3 seems to be dictating from the papers on her lap. S2 says something	**X**
53:38	S3 dictates again, S4 points at the screen and says "Ok" and then types.	**X**
53:52	S3 says something again and looks at her papers, S4 takes the mouse in her hand. She says something to S3 again – they seem to be having a conversation	**X** **X**
54:04	S4 types and says something, then stops typing and puts her hand on the mouse.	
54:18	S1 says something	
54:23	S4, her hand moving the mouse, looks intently at the computer screen	
54:31	S4 types something, then begins moving the mouse again.	
54:44	S4 types again	
54:51	S3 seems to dictate something to S4 again, who types	**X**
55:02	S3 seems to dictate something to S4 again, who types	**X**
55:06	S3 says something, S4 turns to her questioningly – S3 seems to say something in confirmation	**X** **X**
55:13	S3 says something looking at the computer screen, S4 begins to type again	
55:25	S1, S2 and S3 wave to students walking past the classroom behind them	
55:29	S3 says something and S4 laughs, with her hand moving the mouse	
55:44	The researcher says "5 more minutes", S4 asks "what's that?" and researcher repeats "5 more minutes before I have to…". S1 and S2 lean in towards the computer screen.	**X**
55:52	S4 has her hand on the mouse and leans in towards the screen, S3 says something	
55:56	S4 says something, seemingly unsure as to what is written on the screen, S3 says something	**X**
56:11	S1 and S3 seem to agree with each other. S4 smiles and types and moves the mouse	**X**
56:16	S4 looks at the screen and smiles, saying something and seeming satisfied.	
56:23	S4 continues typing with one hand and S3 says something.	

	S3 and S4 both smile.	
56:30	S3 looks at her papers and says something. S4 types	**X**
56:50	S4 stops typing and starts moving the mouse around	
57:06	S4 starts typing again	
57:16	S4 takes the mouse again and has a short conversation with S3 – both of them looking at the computer	**X**
57:24	S4 starts typing again	
57:31	S4 begins to talk to the rest of the students, seemingly making suggestions. All students look at her. She points to the papers in S3's hand and carries on explaining/making suggestions, gesticulating with her hands. S1 nods in agreement. S4 carries on explaining and gesticulating.	**X** **X** **X** **X** **X**
57:54	S3 points to the screen with her pencil. S4, S2 and S1 all look at the screen and say something	**X** **X**
58:03	S3 says something again, S4 has her hand on the mouse	
58:10	S3 points to the papers and to the computer screen with her pencil, S4 looks at the papers. S3 looks up to the computer screen and S4 says something. S3 and S4 seem to discuss something. S1 nods.	**X** **X** **X** **X**
58:40	S4 begins typing again. She then takes the mouse in her hand again.	
58:58	The researcher asks "d'you want to save it?" S3 laughs	
59:07	S4 once again move the mouse around	
59:14	S1 seems to realize something with a bit of a shock, and looks at S3 who also seems a bit shocked and then laughs	
59:25	The researcher says "so now you have to click stop on record, the little red button, and tell me what you're doing"	
59:35	S4 seems to follow these instructions and then says "stop". She continues moving the mouse, and asks if the document is saved. She asks what the document should be saved as. She types the name in.	
01:00	Video ends	

Appendix 21: Samples of Learner diaries – Case Study Two



My learner diary
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?
   Yes. I learnt that using Microsoft Powerpoint to do a presentation can be useful in conveying a message true visual interaction
2. What word would you use to describe today's lesson? Why did you choose this word?
   Interesting. Because I've never seen a french lesson done like this before
3. Did you feel comfortable working with your classmates today? Why?/Why not?
   Yes. Because I usually do and today was no difference
4. Do you think that the media was useful in today's lesson? Why?/Why not?
   Yes. Because I was able to visualize the concept without losing interest and scribbling on paper
5. Do you think that you have used/learn how to use this media in a new way? If yes, in what specific way?
   No. Because I did not exactly participate in the groups so I am still a little unclear as to how to use the media
6. Do you think that your language skills (eg. writing, grammar) have improved? If yes, in what specific way?
   Not quite, because this is only my first time using the media and it will probably take some time
7. In general, how do you think this lesson could have been better?
   The presentation done by group 1 could have been slower

My learner diary
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?
   Yes, the difference between commenting and analyser was made kinda clear.
2. What word would you use to describe today's lesson? Why did you choose this word?
   It was alright because I learnt new vocabulary, heard how words were pronounced and learnt the difference between two ~~some~~ words.
3. Did you feel comfortable working with your classmates today? Why?/Why not?
   Yes, because I understood ~~what~~ they were the points they were making.
4. Do you think that the media was useful in today's lesson? Why?/Why not?
   Up to a point yes in case a person get lost during the lesson but the usage was good.
5. Do you think that you have used/learn how to use this media in a new way? If yes, in what specific way?
   Yes, it was used as somewhat a cue card, that stored alot of information and eliminated writing on the white.
6. Do you think that your language skills (eg. writing, grammar) have improved? If yes, in what specific way?
   ~~Kinda~~ No, not really, it remains the same.
7. In general, how do you think this lesson could have been better?
   Despite some flaws in the presentation, it was good.

10/3/2005.

My learner diary
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?
   Yes I learnt something new today, such as the fact that I could use the powerpoint program to do my french as well as I learnt some important information when writing my essays for exams.
2. What word would you use to describe today's lesson? Why did you choose this word?
   Interactive. I chose this word because a form of the media was used to do something related to school work and it made it very interesting
3. Did you feel comfortable working with your classmates today? Why?/Why not?
   Yes, because I know them very well and it made ~~the tension~~ me feel a little less tense. Also it was for a good cause.
4. Do you think that the media was useful in today's lesson? Why?/Why not?
   Yes, because it made it more interesting and also because the students didn't have to talk a lot.
5. Do you think that you have used/learn how to use this media in a new way? If yes, in what specific way?
   Yes. I learned that I can use it for school work
6. Do you think that your language skills (eg. writing, grammar) have improved? If yes, in what specific way?
   No, not really.
7. In general, how do you think this lesson could have been better?
   The lesson could have been better, if the students had a little more time to work on the project

My learner diary
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new today? If so, what specifically?
   Yes. I now understand the difference between comment and analyse.
2. What word would you use to describe today's lesson? Why did you choose this word?
   Okay. Because I learnt a little but it was not like a real class. It did not seem as if everyone was comfortable.
3. Did you feel comfortable working with your classmates today? Why?/Why not?
   Yeah because we are familiar with eachother.
4. Do you think that the media was useful in today's lesson? Why?/Why not?
   Yep. it made the presentations easy to follow
5. Do you think that you have used/learn how to use this media in a new way? If yes, in what specific way?
   No. I was not involved.
6. Do you think that your language skills (eg. writing, grammar) have improved? If yes, in what specific way?
   Yes I now know what information to put in a comment or analyse essay.
7. In general, how do you think this lesson could have been better?
   I do not know.

10/08/05

10/3/05

My learner diary:
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new during the sessions? If so, what specifically?
Yes, more about Power Point and some new French Vocabulary

2. What word would you use to describe the sessions? Why did you choose this word?
a collaborative effort because everyone worked together

3. Did you feel comfortable working with your classmates? Why?/Why not?
Yes because everyone's skills came into play

4. Do you think that the media was used meaningfully in the sessions? Why?/Why not?
Yes because everyone got to put their ideas in the place at one time instead of putting down your own ideas in separate places then putting them together ~~Yes because students were able to follow the ... carefully and the information was displayed on the flat screen so that the students could read them~~

5. Do you think that you have learned to use this media in a new way? If yes, in what specific way?
Yes to do presentations using the computer

6. Do you think that your language skills (eg. vocabulary, grammar) have improved? If yes, in what specific way?
Yes by learning some vocabulary

7. In general, how do you think these sessions could have been better?
if everyone participated at all times

My learner diary:
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new during the sessions? If so, what specifically?
"The computer is a friend, not a foe," especially if you have a disc.

2. What word would you use to describe the sessions? Why did you choose this word?
Interesting → It was different, less blasé or less boring than the usual class.

3. Did you feel comfortable working with your classmates? Why?/Why not?
Yes, they are very open to suggestions and make quite good suggestions themselves.

4. Do you think that the media was used meaningfully in the sessions? Why?/Why not?
~~Yes, it helped~~
To some extent seeing our ideas, in front of us allowed us to ~~move~~ on ~~not~~ quickly.

5. Do you think that you have learned to use this media in a new way? If yes, in what specific way?
Not in a new way but I appreciate it more and may actually use power point in my oral French presentation

6. Do you think that your language skills (eg. vocabulary, grammar) have improved? If yes, in what specific way?
I'm more confident about speaking the language.

7. In general, how do you think these sessions could have been better?
There could have been greater explanation of the actual statements on the slides.

10/03/05

My learner diary:
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new during the sessions? If so, what specifically?
Yes, I learnt many new things during the sessions. I learnt new vocabulary, how to analyze a question and specific words that must be noted when answering a question.

2. What word would you use to describe the sessions? Why did you choose this word?
Stimulating. It simulated my thinking processes. It allowed me to analyze all the things that I do when I am writing an essay. It also allowed me to see things that I need to include in my essay.

3. Did you feel comfortable working with your classmates? Why?/Why not?
Yes, to a certain extent. At times, the varying of personalities of group members ~~have~~ made it difficult to work efficiently. However, because we worked as a group we were able to handle certain obstacles that arose along the way.

4. Do you think that the media was used meaningfully in the sessions? Why?/Why not?
Yes. we ~~we~~ were able to use the media to assist us in the laying out of the presentation. The media also helped us to present our ideas in a more concise manner. The media also ~~assisted~~ assists us to compile our ideas in a meaningful way.

5. Do you think that you have learned to use this media in a new way? If yes, in what specific way?
Yes. I learnt how to present in a more effective way. Also, I learnt how to integrate graphics into my presentation. Additionally, I acquired information about how to present orally and use power point at the same time.

6. Do you think that your language skills (eg. vocabulary, grammar) have improved? If yes, in what specific way?
Yes. I learnt new vocabulary from various members of the group. Furthermore, my pronunciation of words improved.

7. In general, how do you think these sessions could have been better?
~~Any~~ more attention should have been ~~payed~~ paid to time management. Effective management of time was needed by group members.

My learner diary:
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new during the sessions? If so, what specifically?
Yes, I learnt how to use Power Point and ~~,~~ that made me want to learn more about it. It helped my planning / project management skills I guess.

2. What word would you use to describe the sessions? Why did you choose this word?
An experience ⇒ ~~because~~ the ups and downs working on the project were all part of the experience.

3. Did you feel comfortable working with your classmates? Why?/Why not?
Yes its was OK → sometimes it is hard to work with people because everyone has an idea of the way they want it to be. But one must.

4. Do you think that the media was used meaningfully in the sessions? Why?/Why not?
Yes I do think it's great to use the software ~~on~~ when doing a presentation. It just helps to save time than

5. Do you think that you have learned to use this media in a new way? If yes, in what specific way?
Well, I have never used this media before so it was a useful ~~ex~~ experience, when entering the working world I would have meaningful ideas to ~~bring~~ contribute.

6. Do you think that your language skills (eg. vocabulary, grammar) have improved? If yes, in what specific way?
Yes, a little, I basically used vocabulary that was familiar to me. Also the sessions helped to clarify any grammar point I was uncertain.

7. In general, how do you think these sessions could have been better?
Perhaps if we had nothing else going on, then we would have had more time. But because of personal obligations planning sessions had to be cancelled or rescheduled & after a while the project became prolonged and daunting.

10/03/04

10/3/05

My learner diary:
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new during the sessions? If so, what specifically?
   Yes, more about Power Point and some new French Vocabulary

2. What word would you use to describe the sessions? Why did you choose this word?
   a collaborative effort because everyone worked together

3. Did you feel comfortable working with your classmates? Why?/Why not?
   Yes because everyone's skills came into play

4. Do you think that the media was used meaningfully in the sessions? Why?/Why not?
   Yes because everyone got to put their ideas in one place at one time instead of ~~Yes because students were able to follow the ... more carefully and the information was displayed on the ... that the students could ...~~

5. Do you think that you have learned to use this media in a new way? If yes, in what specific way?
   putting our own ideas in separate places then putting them together
   Yes to do presentations using the computer

6. Do you think that your language skills (eg. vocabulary, grammar) have improved? If yes, in what specific way?
   Yes by learning some vocabulary

7. In general, how do you think these sessions could have been better?
   if everyone participated at all times

My learner diary:
Reflections on lessons conducted during the project:
"Integrating the computer into the language classroom"

1. Did you learn anything new during the sessions? If so, what specifically?
   "The computer is a friend, not a foe," especially if you have a disc.

2. What word would you use to describe the sessions? Why did you choose this word?
   Interesting ⇒ It was different, less blasé or less boring than the usual class.

3. Did you feel comfortable working with your classmates? Why?/Why not?
   Yes, they are very open to suggestions and make quite good suggestions themselves.

4. Do you think that the media was used meaningfully in the sessions? Why?/Why not?
   ~~Yes, it helped~~
   To some extent seeing our ideas, in front of us allowed us to ... or ~~not~~ quickly.

5. Do you think that you have learned to use this media in a new way? If yes, in what specific way?
   Not in a new way but I appreciate it more and may actually use power point in my oral french presentation

6. Do you think that your language skills (eg. vocabulary, grammar) have improved? If yes, in what specific way?
   I'm more confident about speaking the language.

7. In general, how do you think these sessions could have been better?
   There could have been greater explanation of the actual statements on the slides.

10/03/05

Appendix 22: Corroborative analysis of critical friend (3) – Case Study Two (Role definitions and classifications – Learner diaries)

Analysing participant roles:
Describing participant roles based on pupils' perceptions

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.

While reading the statements made by the pupils in their learner diaries, please fill in the table below with the following details:

- selecting statements
- quoting statements (text) which refer to the role of the pupil, the teacher and the computer,
- and coding these statements by selecting a word of your choice (role definition) to define the respective roles

Role	Text	Role definition
Pupil	"students presenting instead of teacher"	Student as presenter
	"a little nervous"	
	"everyone's skills came into play"	Differentiation
	"I did not have much of a choice in the decision-making"	Excluded
	"they (fellow students) are very open to suggestions and make quite good suggestions themselves"	Collaborative
	"I feel more confident about using the language"	Confident
	"I learnt how to use powerpoint"	Learner
	"sometimes it is hard to work with people because everyone has an idea of the way she wants it to be."	Conflict
	"at times, the varying personalities of group members made it difficult to work efficiently. However, because we worked as a group, we were able to handle certain obstacles that arose along the way".	conflict collaborative
	"I learnt so many wonderful things about the computer"	enthusiastic learner
	"not like a real class. It did not seem as if everyone was comfortable"	unknown Uncomfortable

Teacher	"students presenting instead of teacher" "I would actually rather hear it from a professional teacher to be safe"	Teacher in background Professional therefore reliable
Computer	"also more exciting" "took less time to present information" "a common focus" "I am able to change the background and layout…" "everybody was able to put their ideas in one place at one time instead of putting your own ideas in separate places then putting them together" "while we were researching to do the presentation we were learning more" "The computer is a friend, not a foe, especially if you have a disc" "to some extent, seeing our ideas in front of us allowed us to move on quickly" "it's great to use the software, it just helps to save time when doing a presentation. "The media helped us to present our ideas in a more concise manner" "I learnt to present in a more effective way" "working and using the computer was very effective" "it made the presentations easy to follow" "it was used as somewhat a cue card, that stored a lot of information and eliminated writing on the whole" "using Microsoft powerpoint to do a presentation can be useful in conveying a message through visual interaction" "a form of media was used to do something related to school work and made it very interesting"	exciting Faster Cooperation Facilitator Collaboration Organiser Learning-aid Friend Quick Time-saving Effective Concise Effective Simplifier Cue card Substitute for writing Visual aid Educational tool motivating

Analysing participant roles:
Describing participant roles based on pupils' perceptions

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.

While reading the statements made by the pupils in their learner diaries, please fill in the table below with the following details:

- selecting statements
- quoting statements (text) which refer to the role of the pupil, the teacher and the computer,
- and coding these statements by selecting a word of your choice (role definition) to define the respective roles

Role	Code word	Classification
Pupil	Differentiation Collaborative collaborative	Collaborative interaction
	Excluded unknown Uncomfortable Conflict conflict	Negative interaction (other)
	Confident Learner enthusiastic learner	Positive learning experience
Teacher	Teacher in background	Change of role
	Professional therefore reliable	Teacher professionalism (other)
Computer	Faster Quick Time-saving Effective Concise Effective	Time-saving (other)
	Facilitator Organiser Friend Simplifier Cue card Motivating	Helpful

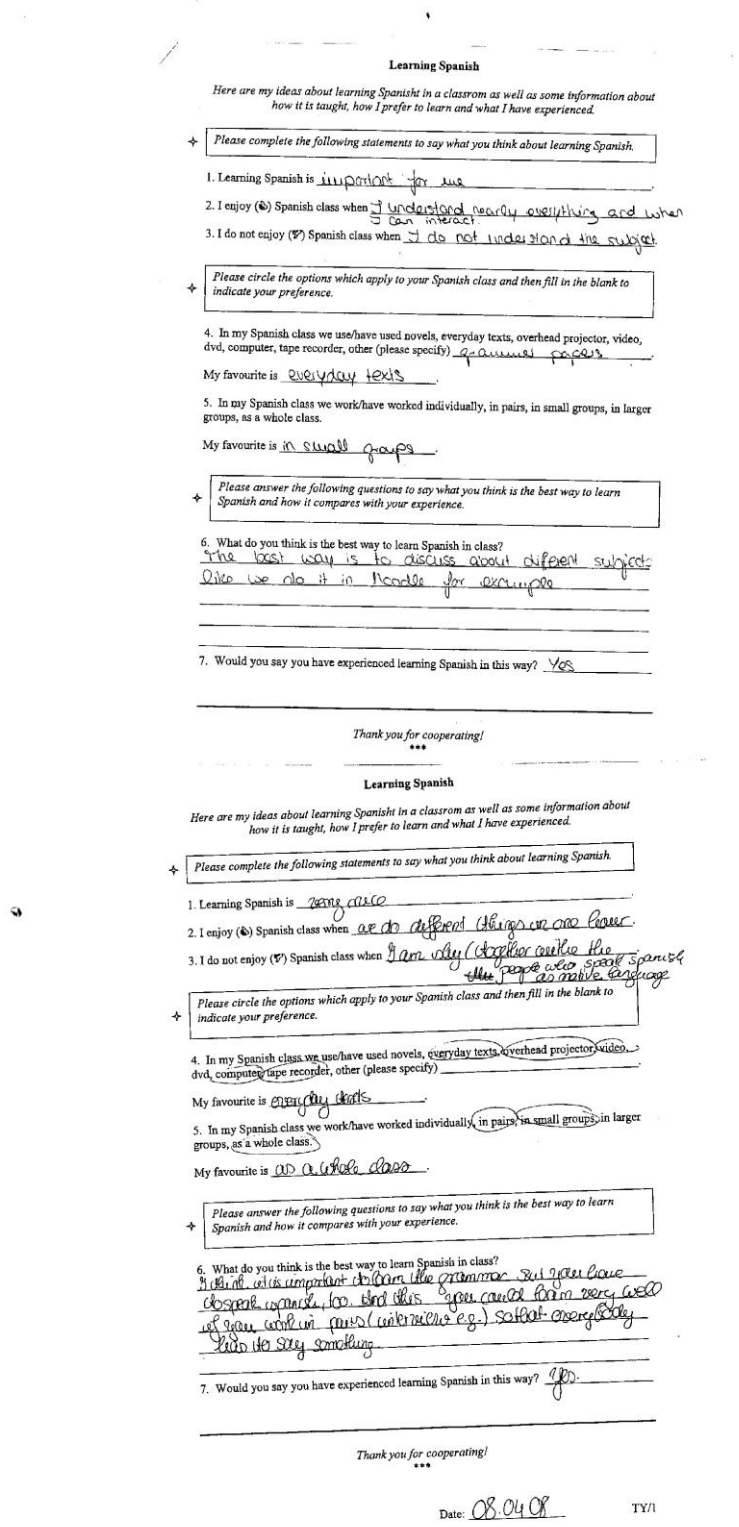
	Learning-aid Substitute for writing Visual aid Educational tool exciting Cooperation Collaboration	 Interesting Supporting collaborative interaction

Appendix 23: Sample extracts of triangulated data exemplifying the analysis from an AT perspective – Case Study Two

Triangulation of classifications emanating from select data sources

Role	Classification of roles Learner diary	Critical friend (Learner diary)	Video protocol
Subject/ Subject collective	Actively involved; Visually stimulated listener.	Positive contributions; Share opinions; Equality; Collaboration, Contributions; Multi-lingual.	Little verbal interaction; Observation; Directing typist.
Mediational means	Facilitator of "visual interaction; Facilitating the structured flow of ideas.	Motivational; Positive; Fun; Interactive.	Holding attention; Centre of input.
Object	Construction/ Deconstruction of concepts and ideas.	Motivational/ Interactive.	Supporting collaborative interaction.
Activity	**Refining** definitions and interpretations **to clarify the meaning of essay questions** (*motive*).	Motivational – "**visual display**" (*motive*).	**Physical interaction**/ **Observation**/ Concentration to move the document along with precision (*motive*).
Action	**Uptaking** concepts ideas**;** **Contributing** in **discussion**/ **co-presentation** to **create visual support for an oral delivery** (*goal*).	Collaborative interaction; Interactive – "**best way to learn French**" (*goal*).	Guiding the slow **build up of the document** (*goal*).
Operation	Computer providing **a common focus** and **encouraging cooperation** (*conditions*) – vis-à-vis *learning efficiency, learning effectiveness, access and convenience* (Hubbard, 2009).	Supporting **collaborative interaction**. (*conditions*) – vis-à-vis *learning efficiency, learning effectiveness, access and convenience* (Hubbard, 2009).	Supporting **collaborative interaction**. (*conditions*) – vis-à-vis *learning efficiency, learning effectiveness, access and convenience* (Hubbard, 2009).

Appendix 24: Samples of Learning preference questionnaires – Case Study Three



Learning Spanish

Here are my ideas about learning Spanisht in a classrom as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning Spanish.

1. Learning Spanish is important for me.
2. I enjoy (☺) Spanish class when I understand nearly everything and when I can interact.
3. I do not enjoy (☹) Spanish class when I do not understand the subject.

Please circle the options which apply to your Spanish class and then fill in the blank to indicate your preference.

4. In my Spanish class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) grammar papers.

My favourite is everyday texts.

5. In my Spanish class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is in small groups.

Please answer the following questions to say what you think is the best way to learn Spanish and how it compares with your experience.

6. What do you think is the best way to learn Spanish in class?
The best way is to discuss about different subject like we do it in Nordic for example

7. Would you say you have experienced learning Spanish in this way? Yes

Thank you for cooperating!

***

Learning Spanish

Here are my ideas about learning Spanisht in a classrom as well as some information about how it is taught, how I prefer to learn and what I have experienced.

Please complete the following statements to say what you think about learning Spanish.

1. Learning Spanish is very nice.
2. I enjoy (☺) Spanish class when we do different things are one hour.
3. I do not enjoy (☹) Spanish class when I am shy (together with the the people who speak spanish as native language

Please circle the options which apply to your Spanish class and then fill in the blank to indicate your preference.

4. In my Spanish class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify)

My favourite is everyday texts.

5. In my Spanish class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is as a whole class.

Please answer the following questions to say what you think is the best way to learn Spanish and how it compares with your experience.

6. What do you think is the best way to learn Spanish in class?
I think it is important to learn the grammar but you have to speak a lot, too. And this you can learn very well if you work in pairs (interactive e.g.) so that everybody has to say something.

7. Would you say you have experienced learning Spanish in this way? Yes.

Thank you for cooperating!

***

Date: 08.04.08 TY/1

Learning Spanish

Here are my ideas about learning Spanisht in a classrom as well as some information about how it is taught, how I prefer to learn and what I have experienced.

✧ *Please complete the following statements to say what you think about learning Spanish.*

1. Learning Spanish is very interesting.
2. I enjoy (☺) Spanish class when we learn something new.
3. I do not enjoy (☹) Spanish class when nobody dares to say something.

✧ *Please circle the options which apply to your Spanish class and then fill in the blank to indicate your preference.*

4. In my Spanish class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) _____.

My favourite is everyday texts.

5. In my Spanish class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is every kind.

✧ *Please answer the following questions to say what you think is the best way to learn Spanish and how it compares with your experience.*

6. What do you think is the best way to learn Spanish in class?
I think it is very important to get a feeling for the language. It is helpful to read everyday texts, to learn new vocabulary and grammar and finally to use them. I think as well it is very good to listen to spanish texts, watch spanish films or spanish music to hear how a "real" spanish sounds.
7. Would you say you have experienced learning Spanish in this way? yes

Thank you for cooperating!

***

Learning Spanish

Here are my ideas about learning Spanisht in a classrom as well as some information about how it is taught, how I prefer to learn and what I have experienced.

✧ *Please complete the following statements to say what you think about learning Spanish.*

1. Learning Spanish is important.
2. I enjoy (☺) Spanish class when I'm able to participate.
3. I do not enjoy (☹) Spanish class when everyone is talking too fast, because then I don't understand.

✧ *Please circle the options which apply to your Spanish class and then fill in the blank to indicate your preference.*

4. In my Spanish class we use/have used novels, everyday texts, overhead projector, video, dvd, computer, tape recorder, other (please specify) _____.

My favourite is everyday texts.

5. In my Spanish class we work/have worked individually, in pairs, in small groups, in larger groups, as a whole class.

My favourite is in pairs/small groups.

✧ *Please answer the following questions to say what you think is the best way to learn Spanish and how it compares with your experience.*

6. What do you think is the best way to learn Spanish in class?
The best way to learn any language, including Spanish, is to speak it a lot, because it is a lot easier that way to develop a kind of sense (feeling) for the language. Reading, whether it is texts or novels a lot is very helpful also.
7. Would you say you have experienced learning Spanish in this way? yes (well, I did not talk a lot, but I did a lot with texts and I know more words)

Thank you for cooperating!

***

Date: 29.4.08 TY/1

Appendix 25: Corroborative analysis of critical friend (1) – Case Study Three
(Role definitions – Learning preference questionnaires)

Analysing participant roles:
Describing participant roles based on pupils' perspectives

Which statements used by the pupils would you say are indicative of the way pupils perceive their role, the teacher's role and the role of the computer.
After looking at the data, please fill in the table below with the quotations you have selected (text) and a word of your choice (role definition) to define the role.

Role	Text	Role definition
Pupil	**Q2. <u>I enjoy Spanish class when..</u>**	
	"I understand nearly everything and when I can interact."	**Interactive**
	"I feel like I am really learning something and the subject is interesting and fun."	**Inquisitive.**
	"I am able to Participate."	**Participative.**
	"I have to listen to CDs write down something."	**Participative.**
	"When there are not many people in class."	**Shy.**
	"Everybody in class participates."	**Participative.**
	<u>Q5.In my Spanish class we have work / have worked individually, in pairs ,in small groups ,in larger groups ,as a whole class.</u>	
	<u>My Favourite</u> is……	
	"Is in small groups."	**Participative/Interactive.**
	"Individually or as a whole class."	**Shy/Participative.**
	"In pairs /Small groups."	**Participative.**
	"Individually."	**Shy.**
	"As a whole a class."	**Participative.**
	"In Pairs."	**Interactive.**
	"In Pairs."	**Interactive.**
	"As a whole class."	**Participative.**
	"Every Kind."	**Participative.**
	"In small groups."	**Participative.**
	Q6.<u>What do you think is the best way to learn Spanish.</u>	
	"Have a lot of conversations in class and also write texts at home, e.g. reports short stories etc. listening to native speakers time to time."	**Interactive/Active**
	"With a great variety of speaking and reading, but the classes should not be too big."	**Active/Interaction.**
	"I think it is important to learn grammar. But you have to speak Spanish too. And you could learn very well if you work in pairs (Interview e.g.) so that everybody has to say something.	**Active.** **Interactive.**
	"It is helpful to read everyday texts to learn new vocabulary and grammar and finally to use them .I	**Active.**

	Think as well it is good to listen to Spanish or Spanish music to hear new real "Spanish" sounds.	**Inquisitive.** **Active.**
Teacher	**Q3.I do not enjoy Spanish when..** "Teaching methods are boring."	**Poor designer.**
	Q6.What do you think is the best way to learn Spanish. "I think a mixture of various teaching methods is the best thing because one can benefit from different methods."	**Creative.**
Computer	**Q6.What do you think is the best way to learn Spanish.** **"The best way is to discuss about different subjects like we do it in Moodle for example"**	**Discussion medium.**

Thanks a lot for your help!

Appendix 26: Corroborative analysis of critical friend (2) – Case Study Three (Identifying collaborative actions)

Analysing classroom interaction:
Describing pupils' (collaborative) actions around the computer

Which actions do pupils carry out while working together around the computer?
Which of these actions would you say are indicative of the pupils working together as a unit, i.e. collaboratively?

While looking at the video recordings, please fill in the table below with the following details:

- giving interval times at which you can identify actions in which pupils engage as they work,
- describing the specific action, and
- placing an "X" in the last column to indicate which actions are indicative of collaboration.

Time	Description of action	Actions indicative of pupils collaborating
00:00	S1 S2 S3 are sitting together at a desk looking at the computer.	
00:10	S1 places her hands on the keyboard S2 and S3 look at the computer at the same time.	
00:13	S1 leans back on her chair and S3 look at each other and they all laugh toward the camera.	
00:20	S2 talks to S3 and she shrugs her shoulders as she looks at S2 while she is talking.	**X**
00:40	S2 is still talking and S1 nods her head. At the same time, S1 and S3 point at the book in front of S2 they all seem to nod and say yes.	**X** **X**
00:50	S1 and S2 are talking while pointing at the book. S2 is looking at the book.	**X**
01:01	S2 is pointing at her book. S1 nods her head.	**X**
01:22	S3 is talking and S1 and S2 are looking at her.	**X**
01:30	S1 leans forward and places her hands on the computer while S3 and S2 all look at the screen same time.	**X**
01:50	S1 is talking, indicating something with her fingers and points at the book in front of S2 with a questioning expression. S3 s looking at the computer while talking.	**X**
02:10	S1 says something pointing at the book in front of S2 and S3 nods her head.	**X**
02:15	S3 points to the computer while S1 still typing S2 is looking at the screen.	**X**
02:32	S3 flips her book open while talking and S1 is typing,	

	S2 looks at what S1 is typing.	**X**
02:42	S3 moves to join S1 and S2 on the other side. They all now look at the computer together.	**X**
02:50	S3 is pointing at her book talking and S1 has her hands on the computer S2 is looking at the screen of the computer.	
03:03	S3 points at the screen while S1 has her hands on the computer. S2 is looking at the screen.	**X**
03:28	S1 is typing on the computer one can see a topic on the slide.	
03:31	S1 is pointing at the book in front of S2 questionningly. S3 nods in agreement.	**X**
03:42	S2 points to the computer and gesticulates as if making a suggestion.	**X**
	S3 is pointing at the screen while S1 is still typing.	**X**
03:47	S2 points on the screen talking while S1 nods her head. S3 says something and then S2 points again at the screen. S1 nods her head.	**X** **X**
03:50	S2 still talking and pointing at the screen. S3 and S are talking to each other about not having internet connection.	**X**
03:53	S1 is typing on the computer. S2 is talking pointing	**X**
04:01	at the screen. S3 leans forward towards the computer.	
04:15	S2 is talking. S3 and S1 are listening. Then S3 points at the computer.	**X**
	A noise in the background causes S3 to look towards the door while S1 and S2 still looking at the screen S3 points at the computer while S1 is still typing.	
	S2 seems to spell a word to S1.	**X**
04:43	They are all looking at the computer and then S3	**X**
	makes a comment which S2 agrees to it too. S1 is	**X**
05:03	still typing but she seems to nod her head in	**X**
05:15	response.	
05:22	S3 is pointing at the computer and S1 is typing. S2 is looking at the computer.	**X**
	S1 and S2 are talking to each other at the same time S1 is typing on the computer.	**X**
05:47	S1 stops typing and they are all talking to each other.	**X**

Appendix 27: Sample extracts of triangulated data exemplifying the analysis from an AT perspective – Case Study Three

Triangulation of classifications emanating from select data sources

Role	Classification of roles			
	Learning pref. qu.	Critical friend (Learning pref. qu.)	Video Protocol	Stim. recall int.
Subject/ Subject collective	Participant; Contributor.	Interactive; Inquisitive; Participative; Shy; Active.	Constant exchange; More/less vocal.	Complementary independent roles, Collaborative.
Mediational means	Facilitator of interaction (online).	Discussion medium.	Focusing attention.	Tool – material level; Social function – Symbolic and semiotic level.
Object	---	---	Collaborative effort.	Collaborative.

Triangulation of classifications emanating from select data sources

Hierarchy of activity	Classification of activity at the AC	
	Video Protocol	Stimulated recall int.
Activity	Constant **consultation**, **cross checking** and **reviewing** of reference document and computer display (material mediational means) to ensure **comprehension by audience** (*motive*).	**Discussiing** and **expressing ideas**, **monitoring visual representation on screen** (*motive*).
Action	**Typing** thoughts so that they appear of the screen to **produce the visual product with appropriate content** (*goal*).	**Talking** out ideas to peers and to the screen. Entering **ideas in a structured manner** (*goal*).
Operation	Computer creating a **focal point** or **reference point** and acting in **partnership** (*conditions*) – vis-à-vis *learning efficiency, learning effectiveness, access and convenience* (Hubbard, 2009).	Medium of **communication** – **communicating ideas** and **facilitating the production/representation of ideas** (*conditions*) – vis-à-vis *learning efficiency, learning effectiveness, access and convenience* (Hubbard, 2009).